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A TREATISE ON

THE

MEDICAL AND SURGICAL

DISEASES OF WOMEN,

BY

A. L. CLARK, A. M., M. D.

PROF. OF OBSTETRICS AND DISEASES OF WOMEN, AND CLINICAL GYNÆCOLOGY
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PREFACE.

Custom demands that a book should be announced by a preface. This is often made the vehicle by which the author announces to his readers his excuses for this public appearance. Having no excuses to offer, it may be proper to here state some of the reasons which have led to the production of this volume.

For several years before the inception of the present work, very many of the students of the Bennett College of Eclectic Medicine and Surgery, to whom the author had the pleasure of speaking upon subjects cognate and identical with those here treated upon, had often kindly expressed a desire for the preparation of such a volume.

While there are several works treating upon the diseases peculiar to women, which appear to lack nothing in arrangement or practical detail, all books derive their chief value from their exposition of the views and experiences of their author. It is hardly possible that any one should for several years make any particular branch of medical practice a matter of especial thought, study and observation, without arriving at some conclusions, and adopting some plans of treatment different from those of others.

Such differences of opinion and diversities in experience, if elaborated in essays, monographs or books, are submitted

to the more crucial test afforded by the experiences of the readers, and ultimately the result is what all most desire, advance in medical science.

In these pages I have endeavored to as briefly and succinctly as possible state the known points of value in connection with each subject treated, avoiding upon the one hand a prolixity and extenuation of detail through which the busy practitioner has no time to follow, and upon the other hand, a brevity which would leave the matter incomplete. Having for nearly a score of years been so busily engaged in practice, that I have scarcely known a day for recreation, I have learned to appreciate the value of time.

To Messrs. Sharp & Smith, 100 Randolph St., Chicago, manufacturers of and dealers in surgical instruments and appliances, I desire to express my thanks for their kindness and assistance in procuring for me most of the cuts with which this work is illustrated.

A. L. CLARK, M. D.

511 State St., Chicago, Ill.,
Dec. 10th, 1878.

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DISEASES OF WOMEN.

CHAPTER I.

INTRODUCTION.

Gynæcology, or that branch of medicine which has for its especial object the consideration of the diseases peculiarly pertaining to woman, as a separate and distinct branch, is of comparatively recent origin.

History renders it certain that the Egyptians studied upon medical subjects, but with our present knowledge of the records left from that age of the world, we have no data from which to estimate the extent or accuracy of their knowledge. Nor are we able, with our acquaintance with Hebrew literature, to determine that any considerable amount of knowledge pertaining to this especial class of diseases was at that time in existence.

With the advent of Hippocrates, 400 B. C., there seems to have been a revival of all that pertains to medical subjects, and he especially seems to have made a careful study of the subject from actual dissections of the human body, and so far as our present information extends, he was the first to treat of the diseases of women in a methodical manner. Precisely how much advancement was made during the next thousand years, it is only possible to surmise by the incidental cropping out of information in the extant writings of that day, that a uterine sound and specula were used, two inventions, or reproductions of very modern date.

From the ruins of Pompeii was exhumed a bivalve speculum, an instrument only generally known in later times, after its introduction by Récamier in 1801, although alluded to as early as 1640 by Ambrose Paré.

So too of the uterine sound mentioned by various authors two hundred years ago; no general knowledge prevailed until its use and advocacy by Simpson and others in very recent times. With, however, the advent of the present century, invention has succeeded invention with such rapidity, that it may be styled the century of discovery; and with these various discoveries, the certainty and facility of diagnosis and medical treatment have again and again doubled. No more striking illustration need be cited than the fact, that but little more than fifty years ago one of the most celebrated surgeons of Great Britain made an incision from "about two inches from the ensiform cartilage to the crista of the os pubis," to remove an ovarian tumor, which proved to be nothing but an accumulation of fat under the skin of the abdomen!! There is now no need for such glaring mistakes, thanks to the inventive genius and untiring energy of such men as Simpson, Baker Brown, Hewitt, Spencer Wells, Sims, Thomas, Peaslee, Atlee, Emmett, and a score of others, whose names, if measured by the greatness of their deeds and the benefactions accomplished by them, are worthy of a place on the brightest and most conspicuous page of history. Of Spencer Wells alone, by his operations for ovariotomy, it is clearly demonstrable, that he has given to the women upon whom he has operated, an aggregate of 9,846 years of usual health, in place of 1,386 years of suffering that must have fallen to their lot without operations, and that during the past thirty years, in the United States and Great Britain, more than 30,000 years of active, useful life, have been given to the women of those countries by this one operation of ovariotomy alone, as performed by different surgeons.

Compared with such results, the deeds of the most exalted military heroes, who have caused indirectly rivers of life-blood to flow, and whose conquering march has been over the dead bodies of thousands of mutilated human beings, seem more like the work of lost angels than of rational human beings.

Yet this is not all. I have alluded to but one of many operative procedures devised and carried out in quiet and unobtrusive silence, by this small army of medical heroes. What the grand aggregate of human suffering saved and life enjoyed would be, no statistics can tell.

CHAPTER II.

ETIOLOGY OF DISEASES OF WOMEN.

No work upon the subject of the diseases peculiar to women should omit at least some passing remarks touching upon the causes of those diseases. That women, as a class, are singularly liable to ill health and disease, is apparent to the superficial observer, and especially to the medical man. Why this is so, I shall briefly consider.

A very prolific source of disease is to be found in imprudence during the menstrual period. Understanding nothing of her condition, her dangers, her duties at this period; uninformed by her mother or other mature friends, the young woman arrives at the age of puberty and menstruation commences. Long walks, picnics, dancing, sitting upon damp ground, allowing the feet to go damp and cold, lifting, taking the most violent exercise perhaps of the entire month, all these and many more similar imprudencies are committed in ignorance. Nature's laws are broken, and the penalty of ill health and suffering is sure to follow.

Tight, closely fitting clothing and corsets are now too assumed, and the uterus lying loosely in the pelvic cavity is forced down; the lungs compressed, but half perform aëration of the blood; the lips become blue, the hands and feet cold; the stomach loses tone, and fails properly to digest the food; the bowels acquire inactivity, and the general relaxation of the entire body being shared by the uterine ligaments, still farther assists in permitting the uterus to descend or tip backwards or forwards.

But having perhaps, with some degree of success, run this gauntlet, marriage takes place, and now commence the endeavors to prevent conception, or, failing in this, to produce miscarriages. Assisted in this too often by miserable moral abortions in society terming themselves doctors—medical prostitutes, who have so far mistaken the great calling of the physician as to conceive that it is to deal death and devastation to innocent, helpless, unborn human beings, instead of prolonging life and promoting happiness—the poor wreck of a woman, with shattered nervous and physical constititution becomes the prey of some ignoramus, whose stock of medical knowledge consists in knowing how to introduce a speculum and apply to a suffering uterus nitrate of silver.

To all these must be added the hot-house system, by which the girl has often, from the first, been reared; deprived, of pure air and judicious out door exercise, because these tan the face and brown the hands, while the mental and nervous systems are fed upon trashy "dime novels" and similar prurient literary slops, and we can no longer wonder that our women become the poor, weak, puny, sentimental creatures that they do, incapable of properly assuming the great glory of woman, maternity.

To avert such calamities by sound advice, is no less the duty of the conscientious physician, than to care for and relieve the sufferings of those poor creatures who, in ignorance having violated the law, are now suffering its penalties.

CHAPTER III.

DIAGNOSIS OF DISEASES OF WOMEN.

No intelligent physician expects to attain success in the treatment of disease, without first learning what condition he is to treat. I say *condition*, for nosological descriptions and terms are mere conveniencies adopted, thrown aside, or changed with the caprice of authors, and we must learn to treat diseased conditions, not names, which, while convenient in description, are of subsidiary importance.

Veiled by a delicacy to a certain extent entirely proper, but at times carried to unwise prudery, the diagnosis of the diseases peculiar to woman is attended by some difficulties not common to other diseases. Hence the ordinary practitioner often treats these complaints for months by guess, discouraging by his lack of success, if not injuring his patient, who concludes with possibly her medical attendant that her difficulty is incurable, and resigns herself with what fortitude she may to a life of suffering. In truth these diseases are as a class as remediable as any other, and no small part of the difficulty attending their treatment lies in the imperfection with which their diagnosis is made and their nature comprehended.

The knowledge upon which our diagnosis is based may be considered under two classes:

1st. The *dynamic* or rational symptoms.

2nd. The *physical* symptoms.

Dynamic or Rational Symptoms.—By this is meant those symptoms of which the patient herself is cognizant. Much tact is often requisite in obtaining from this source reliable information. The ignorance, nervousness, or imagination of the patient may lead us widely astray, especially unless our inquiries are so framed as in the least manner possible to

suggest their answer. We should, no matter what our preconceived ideas may be as to the disease or feelings of our patient, learn from *her* the location of her pains, their character and severity, together with everything she may consider of abnormal significance. True, if after learning some of her symptoms we detail to her others, her curiosity may be excited and confidence strengthened; this is the device of many charlatans, and an accomplishment any well informed physician may exhibit. But while leading his patient astray, he may also be led astray himself, and the method of putting answers in the mouth of the witness should not be allowed, if we desire the truth.

The knowledge thus gained is to be corroborated or disproved by the *physical symptoms.* These are to be obtained by a variety of means, which may be classed as manual and instrumental.

Under the head of manual means of diagnosis, may be mentioned

1. The vaginal touch.
2. Conjoined manipulation.
3. Bi-manual exploration.
4. Abdominal palpation.
5. Percussion.

Of instrumental means we have

1. The speculum.
2. The uterine sound.
3. Tents.
4. Auscultation.
5. The microscope.
6. The endoscope.
7. The Faradic galvanic current.

We may also combine with the foregoing means, if dedesired, the use of anæsthetics.

Naturally, first in order, if not in importance, is the vaginal touch. The patient should be laid upon the back upon

a hard bed, mattress or table,and covered with suitable light covering, the knees well flexed, and the hips brought near the edge of the bed or table. If the bed be too soft, yielding to the body, it may very materially interfere with the facility and correctness of our examination.

The index finger of either hand, previously well warmed and oiled, is now to be introduced into the vagina, and careful note made of everything with which it comes in contact.

The presence of profuse secretion or the absence of a normal moisture, the resistance of the sphincter vaginæ, the condition of the vagina, whether it be relaxed or contracted, wrinkled or smooth, feeling granulated, cicatrized, or at any point constricted, the position of the os uteri, its condition, whether relaxed, patulous, closed or ragged; the presence or absence of secretion, with its character; the condition of the cervix, whether enlarged, softened or hardened, lengthened or shortened; the position of the uterus, its apparent size, mobility and sensibility; the urethra, whether unnaturally thickened or sensitive; the temperature of all the parts, and as to the pelvic cavity, whether bony or other tumors or growths appear, with the condition of the rectum and bladder; and other points of interest will become apparent to the experienced investigator. The anterior cul-de-sac is visited by the finger, and any hardened or abnormal condition made note of, revealing perhaps, an anteverted or anteflexed uterus or calculus in the bladder.

Posteriorly a displaced ovary, hardened accumulations in the intestines, pelvic hæmatocele or tumors may be felt, or a retroverted or retroflexed uterus. Occasionally it may be necessary to a complete investigation, to vary the position to either side, or examine with reference to the position or mobility of the uterus, with the patient in a standing position, one foot being elevated upon a chair or suitable foot-stool.

Conjoined manipulation But the examination does not

end here. The unemployed hand is now to be applied externally to the lower portion of the abdomen, and such moderate but firm pressure as the circumstances warrant be made, in order to bring the uterus down in the pelvic cavity within reach of the exploring finger, which by lateral sweeps, may often learn of ovarian enlargements or tumors. The thickness, size, form, weight and sensibility of the uterus, may now be approximated. Frequently where an unruptured hymen or an occluded vagina offers an obstacle to satisfactory vaginal examination, a finger introduced in the rectum will give us valuable information.

Bi-manual examination. In cases of cicatrization or obliteration of the vaginal canal at any part of its length, while one finger enters the vagina, the index finger of the other hand may enter the rectum, and passing beyond the narrowed and constricted portion of the vagina, give very exact information of the extent and nature of the difficulty; or additional knowledge concerning a retroverted uterus, may be obtained in this manner.

The average distance of the os uteri from the ostium vaginæ, is about four inches, or an ordinary finger's length, subject however, to some individual deviations without morbid significance. In the first three months of pregnancy, the uterus will be found lower down than usual; the presence of ovarian or intra-uterine tumors, ascites, also the standing position, will produce the same effect.

In the later months of pregnancy, especially if the pelvis be rather contracted, it may be almost or quite impossible to reach the uterus; very fleshy or corpulent women also present some difficulty.

The investigation should be conducted systematically, with neither undue haste or prolixity, for as Thomas says: "It will reveal much or little, as it is practiced slowly and thoughtfully or hastily, and as a matter of routine."

Percussion. By percussion we may learn whether any distension which may be present, be due to flatus in the intestines, or the more solid contents of ovarian cysts or pelvic tumors.

The exact areas characterized respectively by dulness and resonance upon percussion are to be noted as indicating the size and extent of solid or gaseous contents of the cavity. The differentiation between ascites and ovarian cyst, is in this manner assisted, and will be explained under that head hereafter.

Auscultation. Auscultation may be performed by the unassisted ear or by the stethoscope. Double stethoscopes of the pattern known as the "Camman stethoscope" will be found most serviceable. By auscultation, we may in cases of suspected pregnancy, be able to verify the suspicion, should we discover the beating of the fœtal heart. Failure to detect the fœtal pulsations, does not, however, positively interdict the presence of pregnancy, but a re-examination should be made after the lapse of a few days, since at the first trial, some particular position of the child, or an excess of liquor amnii, may have made the sounds inaudible, a difficulty which may not present at a subsequent investigation.

From the end of the fourth month, to full term, the fœtal pulsations may usually be observed, their rapidity ranging from 120 to 160 beats per minute, and averaging 130 to 135. The pulse of the mother should be compared with the sounds heard, as its comparative slowness will serve to differentiate sounds which may be heard in the descending aorta from the evidences of fœtal life. The gurgling of flatus in the intestines, will not be persistent and uniform; the sound too of the fœtal heart is peculiar, and once learned, may be always recognized with great certainty. It resembles very much the ticking of a lever watch beneath a pillow or other similar obstruction, and is, when fully recognized, the most positive and valuable sign of pregnancy. A peculiar value attaches to it

in this that no questions need be asked the patient, yet a positive diagnosis is effected when it is heard.

The placental sound, so called from the old notion that it was connected with the circulation in the placenta, is not positively diagnostic of pregnancy, since it may be heard sometimes during the presence of ovarian tumors, or an enlarged uterus from other causes than pregnancy. This sound is synchronous with the mother's pulse, and is supposed to arise from obstructions to the passage of blood in some of the intra-pelvic arteries.

Through auscultation, the gurgling in a fold of intestines overlying a tumor, may be of diagnostic value in determining its character.

Abdominal palpation. The patient lies upon the back with the thighs semi-flexed upon the abdomen, and the ends of the extended fingers are firmly and gradually pressed down upon the abdomen directly above the symphysis pubis. Removing them, pressure is again made half an inch higher, and so on until the entire abdomen has been explored. An enlarged uterus, from whatever cause, is usually thus detected, also ovarian tumors or enlargements, and masses of impacted fœces in the intestines. Coupled with the knowledge that pregnancy exists, this affords the most reliable data as to its probable duration. The fundus uteri, according to Prof. King, (Am. Obstetrics) rises at the termination of the fourth month, two, to two and a half inches above the symphysis pubis; at the end of the fifth month, it will be found an inch below the umbilicus and as much above at the sixth.

The greater the accumulation of fat beneath the integument or in the omentum, the more difficult this and some of the preceding means of diagnosis become in their application, and the more negative their results.

The Speculum.—A great variety of specula are presented for the choice of the practitioner, each possessing merits for particular cases, and no one instrument being adapted for

the greatest service in all cases. The ordinary cylindrical glass speculum known as Ferguson's, Figs. 1, and 2, is perhaps more frequently used by the general practitioner than

Fig. 1. Ferguson's speculum.

any other, and where medicated washes or applications of a corrosive nature are to be applied, it possesses the advantage of being unaffected by them, a point of superiority over all metallic instruments.

Fig. 2. Ferguson's silvered speculum.

These instruments afford often a very satisfactory view of the os and cervix uteri; but while they may prove serviceable in making medicinal applications to these parts, their necessary length renders the passage of the sound through them usually difficult or impossible.

Thomas' telescopic speculum consists of two metallic tubes, one sliding within the other, thus allowing the

Fig. 3. Thomas' telescopic speculum.

instrument to accommodate itself to the length of the shortest vagina, and facilitating the use of the uterine sound. Its more convenient portability is also a recommendation,

its disadvantage being the greater care made necessary to insure perfect cleanliness. The ordinary practitioner will scarcely need or care to obtain the instrument.

The valvular form of speculum embraces a somewhat different principle, and is in many cases superior—in some

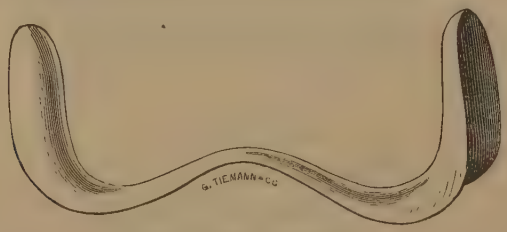


Fig. 4. Sims' speculum.

cases immeasurably so—to the cylindrical. Of these the duck-bill speculum of Sims, with its modifications, is most useful in all surgical operations affecting the vagina or uterus,

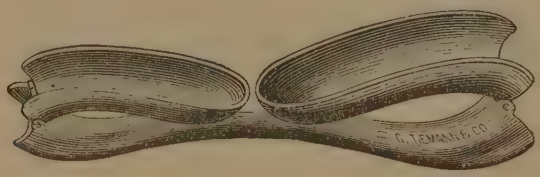


Fig. 5. Dawson's Sims' speculum.

and operates upon the principle of distending the vagina with air as the rectum is forcibly held back by it.

Dawson's Sims' speculum, Fig. 5, has the advantage of

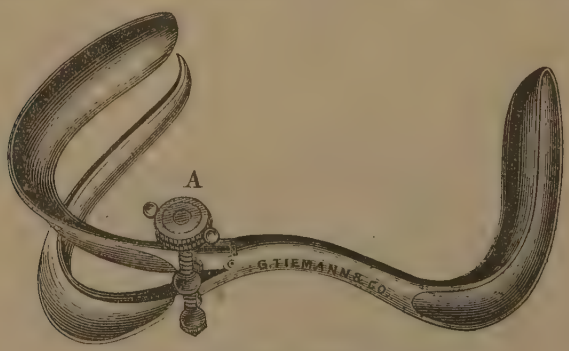


Fig. 6. Dawson's Sims' dilating speculum.

folding so as to become more portable, while his dilating

Sims' speculum, Fig. 6, finds also places where it proves of service.

Another modification of the Sims speculum is the device of Prof. Thomas, Fig. 7, which, by having a perforated piece to apply and fix to the sacrum posteriorly, is designed

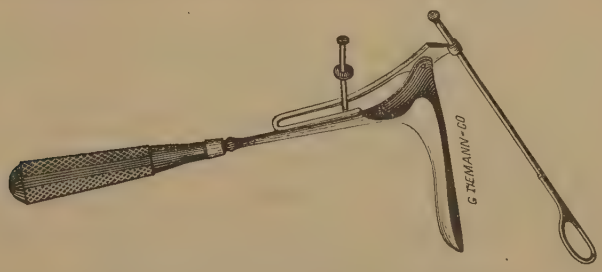


Fig. 7. Thomas' modification of Sims' speculum.

to obviate the necessity of an attendant to keep up constant traction, a somewhat fatiguing duty in lengthy operations.

Storer's speculum, represented in Fig. 8 and Fig 9, is a very convenient and useful modification of Sims' speculum,

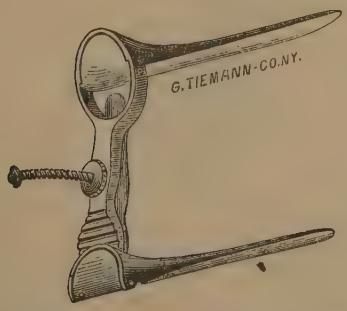


Fig. 8. Storer's speculum used as Sims'.

Fig. 9. Storer's speculum used as Cusco's.

capable of service as a Sims' or Cusco's. The modification commends itself, as avoiding a multiplicity of instruments.

In using the Sims speculum and its usual modifications, the attendance of an assistant is necessary, and for the ordinary purposes of a speculum, that known as the bivalve will be found more convenient.

Of these that known as Cusco's is most useful. This in-

strument possesses the advantage that, when introduced and opened, it is self-retaining, thus leaving both hands of the examiner free for manipulations; it also being quite forcibly extended, draws the uterus somewhat downward, exposes the os finely to view, and makes easy the introduction of tents or a sound.

Its disadvantages are that the lateral walls of a considerably relaxed vagina usually incline to drop between its blades and sometimes entirely obstruct the view, making the instrument completely useless; and folds of the vagina usually incline to drop between its blades while being closed for its withdrawal. Nelson's three valved speculum, Fig. 10, is

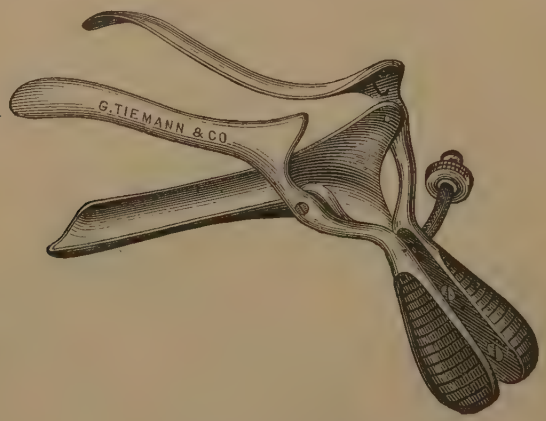


Fig. 10. Nelson's speculum.

open to the same objection, to obviate which specula of four blades are in some cases found useful.

For the introduction of the specula, excepting Sims' and its modifications, the patient is usually placed upon her back, some however, preferring the side. The speculum is warmed and well oiled, and all the necessary instruments to be used, placed handily by; a finger is introduced within the vagina, and its course and the exact position of the cervix uteri ascertained. A neglect to attend to this, may likely result in passing the speculum either into the anterior or posterior

cul-de-sac, and a failure to engage the os uteri in its field of vision.

Keeping well in mind the information thus acquired, the cylindrical speculum is introduced with its longer side or lip posteriorly, so as to engage the cervix and bring it up in full view.

During its introduction, the first and second fingers and thumb of the other hand, are employed in separating the labia, and holding back stray hairs, which if allowed to be pressed before the edge of the speculum, will cause discomfort to the patient.

Occasionally, in case of failure readily to bring the os and cervix into sight satisfactorily, the instrument may be slowly rotated, and in this way the view be improved. That I may always know positively when the instrument is introduced, precisely where its longest side is, I have found it convenient to make with a sharp cornered file, a small notch on its outer rim, sufficient to catch the finger nail. Failing to gain a satisfactory view of the os, the instrument should be withdrawn partially or entirely, and again introduced, varying the direction as seems most likely to accomplish the desired end.

Sometimes with this speculum, one may entirely fail to get a satisfactory view without prolonging the attempt to an extent very trying and tiresome to the patient. In such cases the failure need not be announced to the patient, but a subsequent trial made on another day, when likely no difficulty will be experienced. As the instrument is slowly withdrawn, the condition of the vagina will be observed as it appears at the inner end.

The bivalve is introduced with the same general preparations, its flat sides in apposition with the sides of the vulva, until fairly within the vagina about two inches, when it is rotated one-fourth, bringing the handles upon the symphysis pubis, or the longer of the blades when of different lengths, posteriorly, when it is further introduced to the desired point

and opened, care being taken not to include in its handles, any of the hairs upon the mons veneris.

In removing it, partially, but not entirely, close the speculum, withdrawing it as it is still farther closed, and keeping a constant watch for the inclusion of folds of the vagina between its blades.

The successful use of Sims' speculum and its modifications, requires a greater amount of skill and practice than either of the preceding kinds, all depending upon a proper position of the patient. The patient lies preferably upon the left side, and breast, the hips being brought to the edge of the bed or table, the legs both well flexed, the right most, so as to bring the right knee above the left; the left arm extended at full length is laid close behind the back, and the hips should be slightly elevated by a thin firm pillow, so that the weight of the abdominal viscera may drag in a direction upwards and forwards naturally, carrying with them to some extent, the fundus uteri.

The instrument is taken by its middle portion and one blade with the left hand, while the index finger laid in the concavity of the other blade, is introduced with it, and serves to guide it to the proper position in the posterior cul-de-sac. When fully introduced, it is firmly drawn back against the rectum, while the anterior wall is pressed forward by a sound, suitable spatula, or a *depressor* for the especial purpose. If the proper position has been secured, the os uteri will usually be well exposed, also the anterior and lateral walls of the vagina. Should it be necessary, the anterior lip of the os may be seized with toothed forceps, or a small tenaculum, and the entire organ drawn gently downward.

The use of the speculum will oftentimes corroborate information obtained from other sources, and at times afford new light upon the subject investigated, but its greatest utility is found in the medicinal and surgical treatment of the internal organs.

The uterine sound. This consists of a slender rod of metal, terminating at its distal end in a slight rounded enlargement or knob, and is manipulated by means of a flattened handle of convenient size. Simpson's uterine sound, Fig. 11, is perhaps the most common sound in use, and is graduated to

Fig. 11.
Simpson's uterine sound.

Fig. 12.
Giddings' uterine sound.

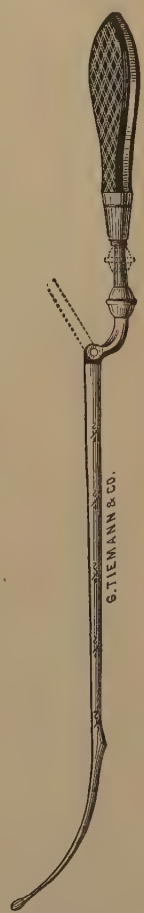


Fig. 13.
Folding uterine sound.

inches and fractions of an inch for convenience in measurement. Giddings' uterine sound, Fig. 12, is provided with a slide, terminated by a bulbous extremity at its uterine end,

and a set screw at the other, by means of which, after the sound has been introduced to the fundus and the slide slipped up to the external os, it may be fixed in place and the instrument removed to permit the reading of the measured uterus at pleasure. Other similar devices have been produced by others, and while really convenient they are open to the not insuperable objection, that discharges and filth may accumulate about the slide, which if of infectious character, may contaminate the next patient upon whom the instrument is used. The remedy is manifest; strict and scrupulous cleanliness. For convenience in portability, a jointed sound, Fig. 13, is also made, which possesses no points of superiority beyond its capability of being carried in a smaller compass. Slender flexible sounds of hard rubber are also used, which from their flexibility will sometimes follow a cervical canal, whose direction is abnormal, better than the ordinary metallic sound. Any desired initial curvature may be given them by gently heating them and holding them bent as desired until cool. In the manufacture of the ordinary metallic instrument, copper, silver plated, or white metal is most commonly employed, and the instrument should be so flexible as to take any desired curvature from the hands of the operator.

In the minds of some, it has been accounted an instrument of questionable safety, but the use of a probang in the throat injudiciously, may cause unpleasant or dangerous results, and vaginal injections of the simplest nature may by entering the peritoneal cavity, produce intense pain or even inflammation, and this too, more frequently than will equally unpleasant symptoms follow the proper use of the uterine sound. Its use then may certainly be considered legitimate.

By it the depth of the uterine cavity is accurately measured, and enlargements of the uterus diagnosticated. The mobility of the uterus, the presence of internal foreign growths, or its attachment or connection with external

tumors, the differentiation of displacements of the organ from tumors, having their origin within or upon its anterior or posterior walls, and any unnatural course of the uterine cavity, by its use are readily determined. It should not be used where there is a suspicion of pregnancy, or where that matter has not been considered; in cases of carcinoma or fungus hæmatodes, or as a rule in acute metritis.

Mode of introduction. A vaginal examination should always precede the use of the sound, by which will be learned the condition and position of the os, with the probable direction of the cervical canal. The instrument, previously warmed, is then to be guided by the finger in the vagina, directly to the external os, where it may meet with slight obstruction, which once passed, it easily slides along the cervical canal to the internal os, where again is found a resisting point.

Positively no force should be used at any part of the proceeding. A relaxed condition of the mucous membrane of the cervical canal in some rare instances, may form pouches into which the point entering can proceed no farther. If suspected, the instrument should be withdrawn a little, and a slightly different direction be taken. If desired, the instrument may be introduced through a valvular speculum. Complete occlusion of the os or cervix will of course prove an insurmountable barrier; it is usually congenital, and if so, menstruation has never been established, yet it should be remembered, that diseased action has even closed the mouth of the pregnant uterus.

Tents. For the more complete exploration of the interior of the uterus, also to remove polypoid or other tumors, it may become necessary to dilate the os and cervix uteri, which may be done by the introduction of tents of sponge or sea-tangle (*laminaria digitata*).

Preparation of the sponge tent. Various plans have been proposed for their preparation, and while those prepared by regular instrument makers are preferable, any physician

may himself prepare a good article. A firm not over fine sponge of good quality should be selected. I prefer small sponges, if they can be procured of the desired size, if not, a large sponge may be cut in pieces of a conical shape and of various sizes, from that of the finger, to the size of a hen's egg, but ranging in length from two to three inches.

The sponge should be thoroughly cleansed by soaking in water, acidulated with sulphuric acid, and afterwards boiling in a solution of carbonate of potassa, by which means foreign substances, both animal and mineral will mostly be removed. With a long darning needle, a piece of strong saddler's silk is passed longitudinally through the pieces and back once or twice. This serves to unite the sponge, so that in its removal, it will not break leaving any portion behind; the ends of the cord projecting from the larger end, assist in the removal of the tent. The sponges thus prepared, are saturated with a thick mucilage of gum arabic, in which may be mixed a few drops of carbolic acid, which is supposed to overcome the disposition to putridity appearing where the sponge is retained for even a short time. They are now wound with a string closely and as tightly as may be, from one end to the other, and allowed to dry. When dry the string is removed, and the tent nicely shaped and smoothed with knife and sand paper, is laid aside for use.

Fig. 14. Sponge tent expeller.

Fig. 14, is a representation of an instrument which will be found very convenient in placing the sponge tent in position. When introduced, the slide pushes the tent off the instrument as it is withdrawn, thus holding the tent in place.

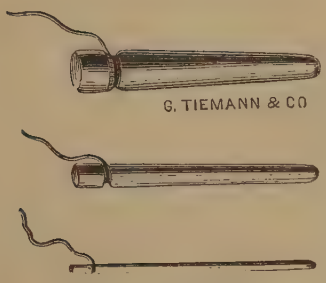


Fig. 15. Sponge tents.

The sea-tangle is a plant found growing in various parts of the Atlantic Ocean, of the family of *Algæ*, and is in some parts used as an edible. It grows in water from ten to thirty feet in depth, and possesses the property of shrinking remarkably as it is dried, recovering its former size again upon being wetted. Long sections of this plant are suspended with a weight attached, to keep them straight as they dry, after which, pieces of the desired length are cut off and turned in a lathe, or otherwise shaped as they are found in the shops. One end is usually perforated for the reception of a cord to facilitate their removal, and they are often bored longitudinally to cause more rapid expansion.

These tents although more difficult to retain, and presenting a harder and more unyielding surface to the cervix and interior of the uterus, are very generally preferred to sponge tents for several reasons.

Being smoother, they are easier removed without irritation or abrasion; neither do they so soon become putrid; nor are they likely to cause pain and irritation. It is often advantageous to wet them for a moment or two in some warm water previous to inserting, as they become somewhat flexible, and the easier accommodate themselves to the cervical canal.

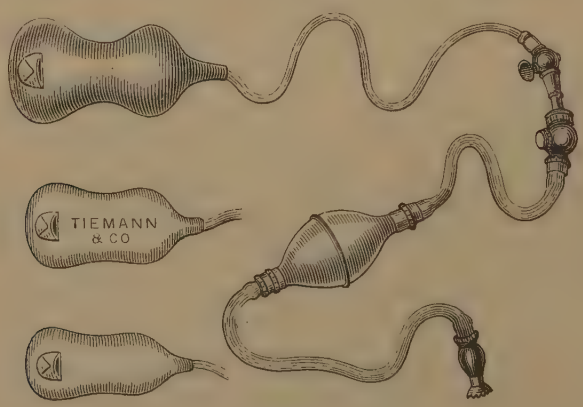
Manner of using tents. The tent, previously oiled, is seized by a long curved forceps, and guided by the finger to the os uteri, is gently insinuated and retained in its place by a tampon of cotton or other similar substance. Or if, as frequently may be the case, this proceeding should be difficult, owing to disproportion of the tent to the cervical canal, the speculum may be used, and one of the lips of the os fixed by a tenaculum or forceps. Dr. Athill recommends the plan of Dr. Kidd, the introduction of several pieces of sea-tangle at

the same time; stating that after the first has been introduced, as it straightens the canal, the introduction of subse-

Fig. 16. Tenaculum for fixing the cervix uteri.

quent pieces is easier accomplished. If at first but few pieces have been introduced, after an interval of nine or ten hours they should be removed, and as many introduced as may seem necessary to effect the desired dilatation.

If, however, a suitable number have been introduced, they may remain for twenty-four hours. He also recommends that the depth of the uterus should first be measured, and the tents be of sufficient length to reach to the fundus, when there will be little likelihood of their slipping out; indeed, should the internal os prove rather rigid, he has experienced some difficulty in removing them, owing to the greater expansion of the portion within the uterine cavity.



Fig, 17. Barnes' dilator.

Sponge tents should not, however, remain longer than twelve hours, owing to their greater tendency to become putrid, and if sufficient dilatation has not been produced by the first, successive tents must be employed.

Their introduction and action will necessarily cause considerable pain, which should be controlled by an opium

suppository, or whatever narcotic or anodyne seems best adapted to the case. Should the degree of dilation be still insufficient, Dr. Athill further recommends the use of a Barnes' dilator, Fig. 17, which consists of an india rubber bag, of fiddle shape, furnished with tube and stop-cock, which being introduced, air or water forced in will in an hour or two, complete the requisite dilation. A Molesworth's dilator, Fig. 18, will be found equally or more effectual.

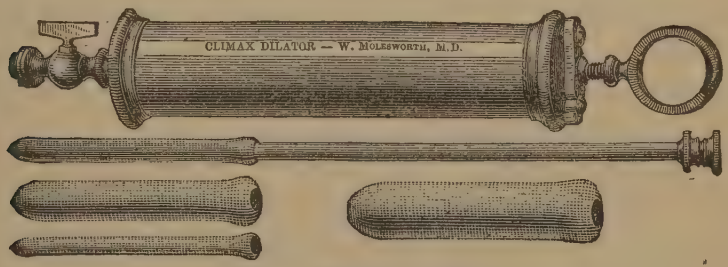


Fig. 18. Molesworth's dilator.

In estimating the local disturbance caused by such an operation, it may be considered that a uterus, already the receptacle of a morbid growth, will, with greater impunity, tolerate instrumental interference.

It must not, however, be considered that this often most useful and necessary means of diagnosis and treatment, is to be undertaken rashly, or to gratify caprice or needless curiosity. In its best and most favorable aspect, it unquestionably involves hazard, resulting perhaps fatally.

A hidden predisposition to inflammation, perhaps a chronic metritis, an imperfectly recovered from intra-pelvic inflammation, a scrofulous or syphilitic cachexy, may prove serious and formidable complications to the operation, and lead to a fatal result. And while fully aware that thousands of cases may be thus treated without a single untoward symptom, I can not too strongly recommend caution in this as in other operative proceedings, nor do I think I can do better than give the following admirable rules from Dr. Thomas, who says, "Diseases of Women," pp. 91 and 92 :

1st. "In the introduction of a tent, no force whatever should be employed. Should that first essayed not pass the os internum easily, it should be at once withdrawn, and either bent so as to follow more accurately the course of the cervical canal, as ascertained by the probe, or exchanged for a smaller tent."

2d. "A tent should never under any circumstances, be introduced at the physician's office and the patient allowed to go home with it in utero. Such practice is hazardous in the extreme. Even when introduced at the patient's home, she should at once be confined to a recumbent position, and be kept perfectly quiet.

"A short time ago I was called in consultation to the bedside of a lady, who was dying of general peritonitis, which had arisen one week after the removal of a sponge-tent by her physician, who was a most careful practitioner. Dr. Braxton Hicks says: 'I have seen a case end fatally where there had been dilatation a week previous, mental shock suddenly lighting up the inflammation and extending it to the peritoneum.'"

3d. "The practitioner should always investigate as to the previous existence of chronic pelvic peritonitis, one of the most common of the diseases of women. Should it have existed, sponge-tents should be carefully avoided. In most of the instances in which I have seen dangerous results follow their use, this condition had previously existed and been excited into activity again by them."

4th. "A tent should never be allowed to remain in the uterus more than twenty-four hours, and if it be compatible with the accomplishment of the desired result, it should be removed in twelve hours."

5th. "After removal of a tent, the vagina should be washed out with an antiseptic fluid, and if any pain, chilliness, or discomfort follow the removal, opium should be freely administered and perfect quietude enjoyed."

6th. "After removal of a tent, the patient should be kept in bed for at least twenty-four hours, and never allowed to travel before the expiration of four or five days."

Anæsthesia. The uses of anæsthesia in diagnosis are too obvious to require more than a passing notice. Where the examination owing to extreme irritability or sensitiveness of the parts or other cause must be of necessity imperfect or cause great suffering to the patient, it is manifestly better that an accurate diagnosis should be effected by placing her under the influence of some anæsthetic, rather than as is too often done, treat the patient at hap-hazard, substituting guess work for what should and might be certainty. In the diagnosis of that class of nervous affections denominated "phantom tumors," the influence of anæsthesia, by at once causing the disappearance of the tumor, completes the diagnosis.

The microscope. No equally sure means exists to determine cancer from other diseases of malignant appearance, whether affecting the mamma, uterus, vagina or any other accessible organ. In my own experience, the case of a lady presenting the appearances of cancer in the breast, was diagnosed as non-malignant, and a favorable prognosis verified by the result. The case is also related of a lady who had for months been suffering from a profuse and offensive discharge from the uterus, and where cancer was strongly suspected, but in which microscopic investigation showed minute specks of sponge from a portion of a sponge-tent used long before for the purpose of dilation. Its removal, thus suggested, was followed by recovery.

The endoscope. The endoscope is an instrument varying in form and construction, by means of which, it is proposed to examine the interior cavities like the rectum and that of the womb after its dilation. So far as at present understood, the field of its usefulness is quite limited.

Galvanism. The Faradic galvanic current is often possessed of some diagnostic value. Being passed by the proper application of the poles of the battery through different parts of the body, it often makes known through their sensitiveness, the presence of derangements in internal organs, which would otherwise remain unnoticed or undiscovered.

Almost all have seen fossil relics of a day past and nearly gone, practitioners whose boast is that they never need or use a speculum, who prescribe their Spts. nit. dulc. and Bals. copaib. for every back-ache, their sulphate of zinc or alum wash for the vagina, and their iron tonics in every phase of female disease. Yet to the thinking mind it appears self-evident that local ailments require local treatment; that an ulceration of the vagina or os uteri requires as much a topical treatment as a varicose ulcer of the leg, and that it is equally as rational to treat one by the mouth solely as the other. The physician who prescribes for a disease of the stomach or brain, must often, nay usually content himself with the manifestations of a diseased action, but the gynæcologist has it in his power to evolve from the seeming obscurity in many cases an absolute certainty, and by a correllation of the symptoms, with the result of his sight and touch, arrive at a correspondingly greater success in treatment.

CHAPTER IV.

THE EXTERNAL ORGANS OF GENERATION.

The external female organs of generation comprise the mons veneris, labia majora, labia minora, clitoris, meatus urinarius, vestibule, fossa navicularis, hymen, and fourchette, which organs collectively are sometimes denominated the pudenda.

The mons veneris is a triangular prominence at the lower part of the abdomen, covering the symphysis pubis and directly above the commencement of the vulva. It is composed of adipose and cellular tissue, invested with epithelium, smooth before puberty, after which it is more or less thickly studded with hairs of varying length in different individuals. Most prominent in youth its prominence nevertheless varies in the adult.

The labia majora consist of two folds of integument, passing downwards and backwards from the mons veneris to the perineum, where their union constitutes the posterior commissure, their union at the mons veneris being called the anterior commissure. Their external integument more or less thickly studded with hairs, covers a loose areolar and adipose tissue, their adjacent aspects consist of mucous membrane, bearing many sebaceous follicles, whose secretion is a semi-fluid or caseous substance. The longitudinal slit or opening formed by their apposition, is called the vulva or genital fissure.

The labia minora, called also the nymphæ, are two folds of erectile tissue, covered with mucous membrane, commencing at the anterior commissure and extending backward to about the middle of the vulva; they present a flattened or compressed appearance, and a more or less dusky pink hue, varying with age and the hygienic condition of the female.

At their anterior union, a bifurcation takes place, the superior prongs of which uniting, form the preputium clitoridis. The labia minora vary much in size, being at times so small as to escape superficial notice, at others quite prominent. In fetal life, they are very prominent, and indicate by their extreme prominence the immaturity of the unborn child.

The clitoris is a small erectile body just behind the anterior commissure, and covered to some extent by a fold of the nymphæ constituting its prepuce. It is the analogue of the male penis, and like it, is furnished with corpora cavernosa, and two erectile muscles, and its extremity is called its glans. It varies greatly in size, at times being hardly discernable, at others several inches in length, having then been mistaken for a hypospadiac penis, and given rise to a belief in the hermaphroditism of the individual.

The vestibule is a triangular space, whose apex is at the clitoris, its base resting upon the meatus urinarius, from three-fourths, to one inch below. Its investing membrane is mucous and supplied with mucous glands.

The meatus urinarius is the external urethral opening, and usually presents a prominence discernible to the finger when sought for the introduction of the catheter; at other times no prominence but an actual depression may mark its location. Where the bladder has been very much distended, and consequently rises high in the pelvis; or where from intra-pelvic tumors a similar condition is produced, also usually in moribund patients, from a general shrinking and retraction of the tissues, this orifice may be carried backwards and upwards, so as to appear to be upon the lower part of the anterior wall of the vagina.

The hymen is a duplicature of mucous membrane, more or less completely closing the ostium vaginæ. At times it presents the appearance of a semilunar or crescentic membrane, occupying either the anterior or posterior portion of the ostium vaginæ, at other times it is a transverse band cross-

ing it, at others a diaphragm closing the outlet pierced near its center by a small opening, while in more rare instances it is completely imperforate; or it may be entirely wanting. It is usually thin and easily ruptured, but may be so firm and resisting, as to preclude coition. Although once considered an essential evidence of virginity, it is not at the present time considered important, since, if very frail, trifling accidents or disease may destroy it, while its presence at parturition has been found at times an obstacle requiring surgical interference.

Surrounding the orifice of the vagina, are found numerous papillæ, termed carunculæ myrtiformes, by some supposed to be the remains of the ruptured hymen; other authorities, however, assert that these bodies may exist independently of the hymen.

Immediately posterior to the hymen, is a slight depression, half an inch in length, termed the fossa navicularis. The membranous union of the labia majora at the posterior commissure, is called the fourchette or frœnulum labiorum. Thin and delicate, it seldom, if ever, escapes rupture during the first parturition.

The perineum, as the term applies to female anatomy, is the space from the verge of the anus to the opening of the vagina, and is normally from an inch to one and a half inches in length. It is traversed antero-posteriorly by a "raphe," a cartilaginous ridge, produced by the union of the sphincters ani and vaginæ and transversalis perinei muscles. Its division or rupture by destroying the insertion of these muscles, becomes when complete a serious accident, since the perineum is the natural antagonist in action to the abdominal muscles, and is the support, to a great extent, of the pelvic contents.

CHAPTER V.

DISEASES OF THE EXTERNAL ORGANS OF GENERATION.

VULVITIS.

Vulvitis or inflammation of the mucous membrane covering the genital fissure may ensue from the following causes:

Want of cleanliness.

Acrid or irritating vaginal discharges, whether specific or non-specific.

Acrid or irritating uterine discharges.

Injuries from friction from excessive venery, onanism or other causes.

Syphilitic infection.

Irritation of the rectum, as from worms or hemorrhoids.

Cold.

Menstrual disorders.

Irritating applications, &c.

It may assume the form of a diffuse inflammation, or the glands alone may be affected, constituting what has been termed follicular vulvitis, or in some rare instances it may take on a phagedenic type, which has been called gangrenous vulvitis.

Symptoms. In simple vulvitis the patient experiences a sensation of heat, to which, if the urethra be affected, may be added ardor urinæ; severe and distressing pruritus is common, and great sensitiveness of the parts, all of which will be aggravated by exercise. If the attack be severe, general feverishness, with thirst and dry skin, may be present. The mucous membrane appears red and swollen in the first stage, dry, becoming subsequently moistened with a secretion which rapidly assumes a puriform appearance, and is thrown off in considerable quantity, soiling the clothing. As the disease progresses excoriations and loss of the mucous membrane may take place.

In the follicular variety the inflammation appears less

diffuse, being in patches slightly elevated, the discharge being often tinged with blood upon slight irritation of the parts.

In the gangrenous variety an ulcerated spot or spots appear, which soon become depressed below the surrounding inflamed surface; mortification, with a discharge of fetid disagreeable odor sets in, which, unless speedily remedied usually shows no signs of self-limitation, but spreads to adjacent structures, while the system, rapidly breaking down, the disease terminates in death. This form of the disease will seldom appear except in patients in a cachectic or debilitated condition.

Vulvitis in children is usually less circumscribed than in adults.

Prognosis. In the first two forms always favorable; in the last doubtful or unfavorable, much depending upon the constitution of the patient, the external surroundings, and the promptness and fidelity with which remedial measures are adopted.

Treatment. Perfect rest and quiet in the recumbent position must be enjoined. Constitutional fever must be met with aconite or veratrum, combined with nitrate or chlorate of potassa. If the bowels be not soluble a seidlitz powder, repeated *pro re nata*, or citrate of magnesia, or other cooling laxative may be administered. Infusions of spearmint, slippery elm, flax-seed or marsh mallow root, or a solution of gum arabic, a teaspoonful to the pint of water, should be drank freely, especially if the urethra be affected.

Locally, applications of a cleansing and cooling and emollient character should be constantly made, as milk and water, castile or tar soap and water, and if tested with litmus paper the discharge proves, as is quite often the case, strongly acid, the use of a wash composed of ten to forty grains of bicarbonate of soda to the pint of water will for a time alleviate pruritus, and prove curative—care being

taken with this as in the use of soaps, not to make the wash of an irritating strength. An infusion of opium or poppy or lettuce leaves, or a weak solution of morphia, may also be used. The sitz bath of a temperature as cool as agreeable to the patient, should be used for fifteen minutes, two, three or more times daily, and in the intervals, poultices may be applied, of slippery elm or flaxseed, mixed with infusion of poppies or water, to which tincture of opium has been added, or the surface of the poultice may be sprinkled before its application with a little pulverized opium.

The active stage of inflammation having passed, infusions of hydrastis, hamamelis, or solutions containing tannin, as an infusion of oak bark, or other mild astringents and tonics should be used either as poultices, being thickened with slippery elm, or by wetting soft cloths in them and applying, frequently changing them.

In the follicular variety, the treatment will not in general vary materially, but should a disposition to ulceration present, the suppurating points may be lightly touched with weak solutions of the sulphate or chloride of zinc, or the permanganate of potassa. A wash of pyroligneous acid and water, in proportion of one to eight or ten, will also be found serviceable.

In the gangrenous form, prompt and vigorous treatment alone can be relied upon. The gangrenous patches should be freely cauterized with nitric or chromic acid, or even the potassa fusa and poultices of yeast, charcoal, myrrh or wild indigo be applied, frequently changing them.

Previous to the application of the poultice, the surface may be sprinkled over with salicylic acid. Constitutional means are not to be neglected, being equally imperative.

Quinine, cinchonidia, salicin, iron, whiskey, milk and beef tea, with whatever else good judgment may indicate as the most sustaining course of treatment, should be freely administered. A large, well ventilated room, with pure air,

sunlight, and every hygienic influence at our command, should be furnished.

Throughout the treatment of vulvitis, in whatever form, the opposing sides of the vulva should be kept as much as possible from touching each other, and during convalescence all causes tending to excite relapse should be sedulously avoided.

ENLARGEMENT OF THE NYMPHÆ.

As heretofore stated, the labia minora vary naturally much in size and prominence, appearing at times merely as folds of mucous membrane, brought to view by everting the labia majora; at other times they may even protrude to a considerable extent, when from their exposed situation they become liable to irritation from the friction of the clothing and exposure to changes of temperature. In some cases their development has been such as to make their ablation seem advisable.

This is readily accomplished by holding the nympha tense, and trimming off to the desired extent with curved scissors, any hemorrhage being controlled by the application of styptics. Usually, however, attention to cleanliness and the application of soothing and emollient remedies will be found sufficient.

At other times they may become the location of warty protuberances, which give rise to troublesome itching and even suppuration.

Dr. Dewees recommends the separation of the labia by the application of strips of adhesive plaster, so as to expose the parts to the drying action of the air, and dredging the inflamed surfaces with prepared chalk. The general treatment accorded to inflamed mucous membranes will be found applicable here. Gonorrheal veruccæ may be pencilled with a weak solution of muriate of ammonia, increasing the strength according to the effect produced, and the

toleration of the parts. Should this treatment prove ineffectual, they may be touched with a pine stick dipped in nitric acid, or at once clipped off with scissors.

ENLARGED CLITORIS.

Excessive enlargements of the clitoris are most common in warm climates. A development to two or three inches in length is not an uncommon event, while numerous cases are on record of its attaining a length of six to seven inches, and one case in which its length was reported at twelve inches. According to Hewitt its excessive length, by interfering with copulation, has been recognized as a cause of sterility. It is sometimes the seat of cancer, which should receive the same treatment that cancer afflicting any other structure demands; nothing short of complete and entire removal, without which all treatment will be futile.

In case of considerable enlargement, the friction to which the part is exposed, has been thought productive of nymphomania. Rest and frequent cooling ablutions, with a non-stimulating diet, and the internal administration of a combination of lupulin five grains, gelsemin one-fourth grain; monobromated camphor in five grain doses; the bromide of potassium; or as recommended by Prof. John King, the alcoholic extract of conium maculatum; or infusion of the buds, or catkins of salix nigra will in most cases prove efficient treatment.

Failing in this, amputation of the organ has been practiced with somewhat varying, but often beneficial results.

ADHESIONS OF THE LABIA.

The labia are at times adherent as a congenital deformity, at others in consequence of disease. Probably a complete congenital adhesion is a rare event; should it be met, the meatus urinarius being thereby occluded, immediate

treatment would be demanded. More frequently, owing to inattention to cleanliness in young children, the discharges from the part becoming acrid, excoriate the mucous membrane and a more or less complete adhesion results. In other cases these adhesions may result from vulvitis, from injuries received during instrumental labors, or from venereal inflammations. In children, the parts being so frequently open to inspection, it is doubtful if the difficulty would remain long unnoticed, hence, if first discovered at the age of several months, or later, the difficulty is probably not congenital. Great care and attention to the cleanliness of the parts should always be enforced, thus guarding against this and all similar affections.

Symptoms. If complete and congenital, the child will be unable to pass water, and an attempt to evert the labia discloses a complete line of union from the anterior to the posterior commissure. An exception to this may occur in cases of deformity, or lack of parts, as in the case of a young woman I have examined, in whom no traces of a vagina existed; the labia were completely adherent, showing a simple *raphe* without depression at their line of union, at the anterior extremity of which appeared the meatus urinarius. If incomplete, the child passes water with perhaps some difficulty, but eversion of the labia presents the same phenomena as before. The meatus urinarius appears near the anterior commissure, and perhaps the anterior portion of the ostium vaginæ may be exposed to view; or the difficulty may first attract the attention of the adult individual after marriage and attempted copulation. In some few instances pregnancy has taken place, and the condition first been discovered at the time of delivery, at which time operative interference has been demanded.

Treatment. This difficulty should be treated when discovered, since delay can usually avail nothing. Occasion-

ally, it is true, the cure has taken place spontaneously; inflammation which at first produced, has again dissolved the adhesion, but while in complete adhesion at birth, treatment is obviously necessary to allow the passage of urine, in the more favorable or pervious cases the urine, or after puberty the menstrual fluid, may be retained in the vagina, or in the sac formed by the posterior part of the adhesion, and inflammation or fistulæ be brought about by the irritation.

The treatment is usually simple. In infants the union is seldom very strong, and the firm pressure of a thumb upon each labium will usually be sufficient to separate them. Should this fail, a catheter, sound, a large probe, or the handle of a bistoury, oiled, may be introduced from the opening in front, and pressure downwards and outwards be made, thus separating the adhesions. Or should it be impossible in this way to overcome the adhesions, a probe pointed bistoury, guided by a grooved director, cutting from within outwards, or a pair of probe pointed scissors will make of it a simple and effectual operation.

In all cases after breaking down the adhesion, its recurrence should be avoided by the introduction between the labia of lint or charpie smeared with cosmoline, mild zinc ointment, mutton tallow, or some similar unctuous substance.

ŒDEMA OF THE LABIA.

Dropsy of the labia is of frequent occurrence in pregnancy, more especially with women who have borne many children and with those of a dropsical diathesis. It may also supervene as a concomitant upon general dropsy, and usually the dropsical tendency is not confined entirely to the labia, but affects the adjacent parts, especially the thighs and perhaps even the feet. It, in cases of pregnancy, is probably especially dependent upon obstruction to the free circulation of blood through the pelvis, from pressure of

the gravid uterus, hence large intra-uterine growths and ovarian or other intra-pelvic tumors will favor its development. Pregnant women, whose occupations keep them much upon their feet, especially during the later months of gestation, are especially liable to the difficulty.

Symptoms. A smooth, uniform enlargement, usually affecting both labia, of pale, transparent or but slightly pinkish color, painless at first, and only producing pain when the distention becomes great, when the pain may be severe. At the time of labor the swelling may prevent a satisfactory vaginal examination; and the proper dilation of the parts being prevented, laceration of the perineum may supervene.

It may be distinguished from labial enterocele by its pitting upon pressure; by the fact also that enterocele is made harder and more tense upon coughing, and projects mostly on the internal surface of the labia, and does not usually affect both sides; from thrombus, by its lacking the dark livid hue peculiar to that affection, which also usually comes rapidly on during labor, while dropsy of the labia is always of slower formation, and at times even disappears just before the commencement of labor.

Treatment. Rest and pressure are the chief therapeutic indications. All the rest and quiet that can be usually commanded is required. The pressure of elastic bandages may be adjusted in connection with a bandage about the hips, and will prove an efficient means of relief. Cloths wet in salt and water, alcohol and water, or a strong infusion of oak or hemlock bark, may also be applied. Should there be present a general dropsical condition of the system, the treatment appropriate thereto should be carried out, and in all cases attention to the function of the skin, kidneys and bowels will be appropriate.

If, during labor, proper dilation be prevented, or at any time should the pressure threaten to disorganize the integu-

ment, several punctures should be made in the most tense portions, and the serum be thus allowed to escape. Erysipelatous inflammation is a not uncommon sequence to severe and long continued pressure of the serum. A light but nutritious diet should be prescribed.

ABSCESS OF THE LABIUM.

This is also called phlegmonous inflammation of the labium. The most common causes are:

1st. A condition of the system favoring the formation of abscesses in any part of the body.
2d. A scrofulous taint.
3d. Injuries or bruises of the parts.
4th. Excessive coition.
5th. Masturbation.
6th. In some cases perhaps vulvitis and acrid secretions of the adjacent organs.

The last two causes may especially be productive of abscess affecting the glands of Bartholinus, but I can hardly credit that they will often produce general abscess of the labium. Abscess of the labium may supervene upon labor, and the disease having been once developed, has in my experience shown a disposition to recur, after an interval even of some years.

Symptoms. A circumscribed swelling of one labium, causing usually greatest protrusion and bulging upon its mucous surface, accompanied by heat or a burning sensation, and throbbing pain increased by sitting, standing, walking or crossing the thighs. The course of the inflammation is usually slow, but the formation of pus rapid.

Differentiation. It should be differentiated from:

1st. Labial hernia.
2d. Labial tumors.
3d. Oedema.
4th. Thrombus.

It should not be confounded with labial hernia and a truss applied—a treatment I have once seen resorted to—nor should it be lanced until a certain diagnosis from hernia is made. This will be easily effected if we observe its greater hardness, its gradual formation, its irreducibility, and the absence of impulse upon sneezing or coughing. If any doubt remain, puncture with an exploring needle, or the needle of a hypodermic syringe will test the matter. The rapidity of its course with the evidences of inflammation; will serve to differentiate it from tumors, while the absence of pitting upon pressure, with its more circumscribed appearance will distinguish it from œdema. Thrombus appears during labor, or immediately upon the receipt of some bruise—comes on much more rapidly and presents a darker and more livid color.

Prognosis. Favorable.

Treatment. From motives of delicacy the physician is not usually consulted until the suppurative stage is ushered in, at which time an incision should be carried in at the point calculated to promote the freest evacuation of the pus. Usually the mucous surface should be chosen, and it is folly to wait for a spontaneous evacuation of the imprisoned pus, since from the loose cellular construction of the underlying tissues, the tendency is for the abscess to attain great size, and it may even pass upward along the round ligament, through the abdominal rings, or after extensive burrowing, discharge by numerous openings which tend to become fistulous.

In some cases, the process of healing may be unpleasantly delayed, in which event, stimulating injections of pyroligneous acid diluted with water; weak solutions of the sulphate or chloride of zinc; or water slightly acidulated with sulphuric

acid, and other preparations of similar nature should be used once or twice daily.

If seen during the inflammatory stage, attempts should be made to promote resolution. For this purpose, there is perhaps no better application than the following:

℞ Ol. olivæ camphorat., ℥j.
Ext. belladonnæ fl., ʒj.
M. Ft. lotio.

With this let the parts be constantly moistened by applying cloths saturated with the preparation. Instead we may use a solution of muriate of ammonia, two to three drams to water one pint, or paint the part affected once or twice daily with tincture of iodine.

Prof. King recommends the application of fomentations of hops and lobelia or stramonium, usually warm, at times cold applications producing better results. A debilitated state of the system should be met by appropriate tonic treatment, febrile excitement controlled with aconite or gelseminum, singly or in combination, and rest procured by the exhibition of the pulv. ipecac. et opii comp., the aqueous extract of opium, extract of conium, chloral hydrate or other similar means.

Furunculæ or boils may appear as a sequel to abscess, especially where the evacuation of the pus has not been ample and complete, or they may occur independently and as in the loose tissues of the armpit, they tend to "go to seed," or appear in successive crops. They not only are distressing to the patient, but frequently troublesome to the practitioner.

Thorough attention to cleanliness, the early evacuation of their contents, and a persevering application of the camphorated oil mixture before mentioned, with attention to constitutional indications, will prove a successful course of

treatment. As a discutient for boils, whitlow, etc., Dr. I. J. M. Goss, of Marietta, Ga., recommends the following:

℞ Tinct. iodini, ʒij.
Tinct. aconiti,
Tinct. arnicæ, aa ʒj.
M.
Sig. Apply three or four times a day.

I doubt not the application might be of service in this case if early resorted to.

TUMORS OF THE LABIA.

The principal varieties of tumor affecting the labia are:

1st. The sanguineous, blood tumor or thrombus.
2nd. Fibrous, fibro-cellular or fatty.
3rd. Encysted tumors.
4th. Oozing tumors.
5th. Warty tumors.

Sanguineous or blood tumor. This affection called also *hæmatoma* and *pudendal hæmatocele*, consists of a rupture of the plexus of blood vessels known as the bulbs of the vestibule. This affection is almost always due to violence in some form, as from external blows or contusions, or consequent upon the dilation of the parts during labor. Some have considered that a varicose condition of the labium, was necessary to the formation of thrombus, but it has been shown in repeated cases that this is not an essential pathological condition.

Again, Velpeau claims that in non-puerperal women, the condition is developed almost as often as in the puerperal, while others have considered it as an incident only to the puerperal state. Incontestably it may appear in either, although my own experience has limited it to child-bearing women.

Pathology. An anatomical consideration of the parts involved will reveal beneath the integument and cellular tissue of the labia, an extensive plexus or ramification of blood vessels, which has been called the *bulbi vestibuli.* A rupture or laceration of these vessels has been known to give rise to fatal hemorrhage, and a subcutaneous rupture, allows the blood to infiltrate throughout the tissue beneath the skin of the labium or surrounding the side of the vagina. Manifestly blows, or sufficient external violence, as from falls, where the patient has struck upon the pommel of a chair, etc., etc., also the passage of the child's head during labor, and other causes, which may suggest themselves to the mind of the practitioner, are sufficient to produce rupture of these vessels. The name thrombus, from the Greek *thrombo*, "I coagulate," indicates the formation of clot, which takes place in all cases where the injury is uncomplicated with laceration or injury to the integument.

Symptoms. A swelling, usually of one but may be of both labia, usually coming on rapidly during labor or after some injury, bruise or contusion, but its formation may be slow, commonly painful, but at times painless, and first discovered on examination. It presents, especially upon the mucous surface of the labium, a dark purple or livid appearance, and if the swelling be considerable, by pressure upon the anterior portion of the urethra micturition may be rendered difficult or impossible.

Its size may vary from that of an almond to a tumor nearly as large as a child's head, and the subcutaneous effusion may be so extensive as to implicate the mons veneris, vagina, and nearly the entire perineum. If the vessels ruptured be large or many, the tumor will be proportionately large, and its pain will be proportional to its size and the amount of tension upon the parts. In small lacerations the effused blood by clotting may spontaneously limit the size of the tumor.

Prognosis. Usually favorable, although death has resulted from this cause. If left to itself absorption may take place in a few days, or a vesicated appearance of the mucous membrane of the labium will be followed by a spontaneous rupture of the sac, with discharge of the coagulum, or becoming partially encysted it may become the nucleus for extensive phlegmonous abscess of the labium. The dangers are primarily from hemorrhage, which may follow the accidental rupture of the integument or its designed incision; secondarily septicæmia, from the putridity of a large clot, neither absorbed or discharged previous to its liquefaction and disorganization; indeed owing to the laxity of the tissue here implicated this result may even follow after the evacuation of the clot, especially in the puerperal state, from the greater distension of the blood vessels and the greater activity of the lymphatics.

It should not be confounded with abscess, hernia, or œdema of the labia.

Treatment. Occurring previous to delivery, should its size prevent a proper dilation of the parts, our only resource is to puncture the tumor at one or more points and allow the blood to escape, controlling hemorrhage by the application of cold and styptics. Bags of ice, or cloths containing ice or wet in the coldest water at our command, may suffice with pressure. Or a solution of the persulphate or perchloride of iron may be injected into the sac through the incisions, which should be made upon the mucous surface of the labium.

If small, however, and not interfering with the progress of the labor, no interference is demanded until after delivery, when the same treatment may be employed, as hereafter mentioned as applicable to sanguineous tumor, uncomplicated with pregnancy or manifested after delivery.

In these cases should the tumor be small and not inter-

fering with the passage of urine, or excessively painful, cooling discutient and anodyne applications should be made. Alcohol and water, solution of muriate of ammonia, tincture or infusion of baptisia, tincture of opium, and tincture or fluid extract of belladonna, are among the remedies that will be found useful as external applications. Failing by these means to resolve the tumor, it should be opened at the first appearance of spontaneous disorganization of the mucous membrane.

LABIAL HERNIA.

A fold of intestine, omentum, or even an ovary may, following down the inguinal canal beside the round ligament, appear in the labium, in a manner precisely similar to that in which an inguinal hernia in the male reaches the scrotum. The tendency to strangulation is not so great in labial as in scrotal hernia, but the liability to error and the necessity for precision in diagnosis are much greater, as delicacy may have prevented the acquisition of as full and accurate a knowledge of the case as would have been afforded in male inguinal hernia; the practitioner may be off his guard, and the labium does not afford as good an opportunity for critical examination as does the scrotum. A thorough investigation should be insisted upon in all doubtful cases, or the responsibility of the case declined.

Causes. The same causes which will produce a scrotal will cause a labial hernia, such as violent muscular exercise, lifting, falls, especially if some hard body comes in contact with the iliac region, a congenital tendency to hernia and the like.

Diagnosis. Labial hernia may be mistaken for abscess of the labium, and even œdema and thrombus, and since the treatment of abscess, and possibly œdema and thrombus, may demand incision, it will be seen that an error

might be fraught with fatal results. Prof. Thomas states an instance of the kind, in which a lady who, but a short time previously, had had, under the care of another medical practitioner, a labial abscess, from which she had just recovered to observe, as she supposed, a reappearance of the same difficulty, and her former attendant being absent, she called upon him to have it opened. Making an examination hurriedly in a standing posture, he very naturally, under the circumstances, supposed her diagnosis to be correct, but upon having her assume a recumbent position, he observed the reducibility of the swelling and saw that it was a case of hernia, supervening upon abscess. Had she chanced to employ a less skillful or careful surgeon, the result, it will be easily seen, might have been most serious.

The diagnosis will be made:

1st. By the usual reducibility of the tumor, when the patient is placed in a recumbent posture.

2nd. By the presence of impulse upon coughing or sneezing.

3rd. By the natural color of the integument.

4th. Often by the history of the case.

And should any possible doubt remain in the mind of the practitioner, I cannot too strongly urge the use of the exploring needle before any attempt at incision.

Treatment. Return the protrusion, and apply a truss of such make as to keep the mass from again descending. Occasionally no inconsiderable difficulty will be met in reducing the hernia, but the same general principles prevail that govern the application of taxis in other forms of hernia, among which may especially be mentioned the application of ice or cold in some form, the use of anæsthesia, and puncture with the needle of a hypodermic syringe to allow of the escape of fluid or flatus. Should strangulation, with its attendant symptoms, be met with, the necessary

operation will be the same as for ordinary strangulated inguinal hernia.

HYDROCELE.

Hydrocele is a very rare affection of the female, and consists of a collection of serous fluid about the round ligament and its terminal filaments in the labia majora. Where the peritoneal covering of the round ligament remains open and continuous with the canal of Nuck, a condition is present which may result in hernia, and renders a hydrocele possible. In this case the contained fluid may be secreted by peritoneal membrane within or on the abdominal side of the inguinal rings, and after its descent, the passage being closed, a return may become impossible. Or a condition favorable to the secretion of such a fluid existing throughout the membrane may, in the initial stages of the disease, close the connection with the abdominal cavity.

Symptoms. A tumor of the labium, slowly and without pain increasing in size for months and perhaps years, fluctuating, not tympanitic upon percussion, usually translucent and irreducible. Its diagnosis should be verified by the introduction of a slender aspirator needle, or the needle of a hypodermic syringe, before attempting any operative procedure.

Treatment. Tap the sack with an aspirator or small trocar and canula, and draw off the fluid, after which inject with tincture of iodine, allowing the injection to pass away after two or three minutes. Should the first operation prove a failure, as is sometimes the case with hydrocele of the male, it should be repeated, and an ultimate cure may confidently be expected.

INFLAMMATION OF THE GLANDS OF BARTHOLINUS.

Immediately upon each side of the ostium vaginæ are situated two glandular bodies of nearly the size of a hazelnut, whose excretory duct opens just anterior to the situation of the hymen. They are called the glands of Bartholinus, he being the first to describe them, and their normal product appears to be mucus, which is discharged by a straight canal or passage, three-fourths of an inch in length. In common with all the glands of the body, they occasionally become the seat of inflammatory action, which may terminate by resolution or suppuration.

Causes. A strumous diathesis, or a predisposition to glandular inflammation in general, excessive coition, violence during parturition, blows, or injuries from whatever source, are among the exciting causes. Often times it is impossible to assign any satisfactory cause. In some individuals a tendency to inflammation of these glands seems to prevail, as with others a similar disposition to tonsillitis may be observed.

Symptoms. If consulted early in the attack, heat, pain, redness, and the hardened and circumscribed gland are the prominent symptoms. Usually from motives of delicacy, medical assistance is not invoked during the first stages, and the stage of suppuration has been ushered in. Indeed, this stage may be indefinitely lengthened out to weeks or even months, so that all signs of active inflammation may have disappeared, and our attention will be called to simply a swelling of variable size. Usually one, but occasionly both labia are simultaneously affected.

Diagnosis. From labial hernia by the history of the case, by the absence of impulse upon coughing or sneezing, by its irreducibility, by the lack of prominence in the inguinal canal, and by its fluctuation in place of possible reso-

nance upon percussion. From œdema by slight if any pitting upon pressure, and by a lack of the semi-transparent pearly appearance of the skin in the latter disorder. Any doubts in the matter should be solved by the introduction of an exploring needle, previous to incision.

Treatment. If happily the practitioner be consulted during the early stage, means to promote resolution should be adopted. For this purpose, cloths wet with a strong solution of the extract of belladonna, to which may be added a little muriate of ammonia, should be constantly applied as often as they become dry, or camphorated sweet oil with belladonna may be substituted. For this purpose the following formula may be used with good effect.

℞ Ol. olivæ camph., ℥iij.
Ext. belladonnæ fl., ʒj.

M. Sig. Use as an application by wetting soft pieces of cloth, changing every two hours.

Or instead:

℞ Ext. belladonnæ sol.,
Ammon. muriat., aa, ʒj.
Aq. font., ℥iij.
M.

to be used as before stated. These measures will necessitate a considerable amount of quiet and rest, which is another important consideration. Failing in all efforts to promote resolution, suppuration is inevitable, which having taken place, an incision should be made at the most suitable point for the free evacuation of the pus. If the healing process should be unduly slow, and suppuration with the discharge of pus continue for some time, the cavity should be syringed out with a solution of the sesquicarbonate or permanganate of potassa, (grs. v to x, to water ℥j,) or the sulphate, chloride, or bromide of zinc in solution of appropriate strength. Brushing the cavity, if practicable, with tincture of iodine

upon a camel hair brush, and stuffing its cavity with oiled lint or charpie, have also been found serviceable. Extirpation of the gland has been advocated and practiced as a means of relief, in cases where a disposition is manifested for a frequent return of the inflammation. It will seldom be found necessary.

IMPERFORATE HYMEN.

An increased development, or hypertrophy of the membrane which normally only partially closes the ostium vaginæ, occasionally produces an entire closure of that orifice, and constitutes an imperforate hymen. Perhaps no portion of the body is subject to such extensive variations as the hymen. Thus it may not be inconsistent with perfect chastity for the hymen to be so rudimentary or slightly developed as to be considered entirely wanting; it may appear as a delicate semilunar membrane closing the anterior or posterior portion of the vaginal orifice; it may constitute a band stretching laterally across the opening; it may close the ostium vaginæ, except a small aperture of variable size centrally located; or as stated above, it may completely occlude the vagina, and in any of these forms it may be a membrane so thin as upon rupture to scarcely afford a drop of blood, or a dense fibro-cartilaginous membrane an eighth or three-sixteenths of an inch in thickness.

Ordinarily of no physiological significance, it only becomes important when by completely closing the vaginal orifice it prevents the escape of the menstrual fluid or other secretions of the parts. Occasionally this condition is noticed in infancy and then remedied, but usually attention is first called to it after the commencement of menstrual life.

Symptoms. The age of puberty having arrived menstruation is absent, the menstrual molimen is present, the pains and symptoms indicative of menstruation appear, but

no flow, and from month to month this state continues. After a time an enlargement of the abdomen appears, due to the bulk of the retained menstrual fluid, and ultimately, should the nature of the difficulty remain undiscovered, symptoms of failure of the health, and perhaps dropsy, supervene; and from the absence of menstruation and the abdominal enlargement it is not an uncommon thing for the suspicion of pregnancy to be formed. Usually the vagina and uterus, becoming distended with menstrual fluid, there will at each menstrual period be an effort upon the part of the uterus by contracting to expel its contents. Uterine contractions, precisely similating labor pains, are present; the hand laid upon the abdomen externally feels the hard and contracting uterus during the pains, which are excited or increased by such manipulation, as also by warm pediluvia, hip baths, or other means to increase or excite the menstrual flow.

If a vaginal examination be attempted, it will of course be found impossible to introduce the finger into the vagina. Inspection will reveal posteriorly to the meatus urinarius sometimes a slightly bulging, fluctuating, bluish space where the vaginal opening should appear; or should the hymen be thick and firm enough, nothing may appear but the absence of all communication with the vagina. Owing to inflammatory action, the parts may be extremely sensitive and tender.

Diagnosis. It is almost impossible, with a knowledge of the symptoms already enumerated, that any doubt should remain as to the true nature of the difficulty. Perhaps a finger introduced in the rectum, with a sound or catheter in the bladder, might in some cases reveal the enlarged and distended vagina, but in cases of long standing the vagina becomes so dilated as to fill the entire pelvic cavity.

Treatment. A small puncture with a bistoury or lancet

should be made through the hymen when the retained menstrual fluid will flow freely out, giving immediate relief to the urgent symptoms. It is desirable that the incision should be small, as from the sudden evacuation of the long retained fluid and the ingress of air, putrefaction of some portion remaining behind may ensue, or even fatal inflammation. Manifestly in such a case it is necessary to keep the patient recumbent for a few days, as after parturition, that the uterus may have time to contract down to its ordinary size, and to allow the walls of the vagina to recover a degree of tonicity, lest prolapsus or other displacement of the womb follow.

After an interval of ten days or two weeks, and no signs of inflammation being present, a sufficient amount of the hymen should be removed to insure against any future trouble. This may be done by dividing the membrane by a crucial incision with scalpel, bistoury or scissors, and cutting off from each of the corners as much as may be deemed necessary, so that should contraction follow the process of cicatrization, all difficulty may even then be obviated.

COCCYODYNIA.

Under this name has been described a somewhat singular and not uncommon affection, consisting in the main in persistent, severe and intractable pain in the region of the coccyx. This pain is intensely aggravated upon attempting to sit down, or rise up when sitting, especially if the seat be low, also from defecation and pressure upon the coccyx in any direction, and is usually ameliorated by rest and quiet, especially in the recumbent position. Often, indeed, it is impossible for the sufferer to sit upon both nates at the same time, and she attempts to relieve the pressure by reclining against another chair, a bed, the side of the room, or by holding on to some article of furniture with the hands.

The pain has at different times been thought to be neuralgic and rheumatic in character, and the most scientific and extensive treatment resorted to upon these suppositions, has been found without avail. It only remains to add that in a few cases symptoms of inflammation, with an increased heat of the part, may be observed.

Anatomy and Pathology. The coccyx affords attachment in a greater or less extent to the greater and lesser sacro-ischiatic ligaments, and to the gluteus maximus, coccygeus, sphincter and levator ani muscles.

Motions of the body, calling into exercise any of these structures, increase the pain, and in some cases it seems likely that a hyperæsthetic condition of the tissues surrounding the coccyx may produce the difficulty under consideration. Where the bone has been removed it has in many cases been found carious and in different conditions of disease.

A periostitis affecting the coccyx, or a synovitis implicating the sacro-coccygeal articulation, seem to me, from the history of some cases that have come under my observation, to be probable pathological conditions.

Causes. Blows or violence, as from falling upon a hard pavement, or a chair, injuries received during parturition, and colds, are among the recognizable causes, and in many cases no satisfactory cause can be assigned. Apparently an injury has in some cases been received, even years before the development of coccyodynia.

Treatment. While the condition of the parts was less perfectly understood than at present, nearly all conceivable plans of treatment were tried, and usually found useless. Constitutional treatment manifestly could avail little, if there were carious bone prolonging a nervous irritation; and this with the administration of all the narcotics of the materia medica by the stomach, endermically and hypoder-

mically, has time and again been tried, only to disappoint both patient and practitioner. Occasionally time has seemed to work a cure, irrespective of all remedial appliances, but more usually the months of this disease lengthen out to years, while the health of the patient, except as affected by the continuous pain, is undisturbed. Two radical plans for cure have been devised and practiced with very gratifying results. The first is that of Prof. Simpson, and consists in dividing subcutaneously with a teneotomy knife all the muscular attachments of the coccyx.

To perform the operation, a long bladed teneotomy knife is passed in at the apex of the coccyx and carried up flatly upon its posterior surface to the sacro-coccygeal articulation, when the blade is turned and swept down along the lateral border of the bone, so as to entirely divide all muscular attachments. The same process repeated for the other side of the bone completes the operation. In very fleshy persons it may be necessary to make an incision one and a half or two inches in length down the middle of the posterior surface of the bone, and from this operate laterally, dividing all the attachments as before mentioned. Relief is usually immediate and permanent, but occasionally after a few weeks a relapse occurs, requiring a repetition of the operation; and should the disease still persist, the treatment adopted by Dr. Nott, of extirpating the bone, may be relied upon to effect a cure. The operation is simple, and may be easily and rapidly performed in the following manner: An incision, two inches in length, is made down the posterior surface of the coccyx to its point, exposing the bone, which is then to be freed from all attachments and cut off with a pair of bone forceps. With a pair of pliers or strong forceps it may now be seized and everted, while the rectal surface is freed from its attachments. Two or three sutures and the usual dressings are all the attention required by the wound.

Although we have very satisfactory results to anticipate from these methods of treatment, it is well first to try, for a limited time, the effect of the more expectant treatment of time and narcotics, since some cures will be thus obtained. I have seen very good results follow the application of belladonna plaster, with rest.

PRURITUS VULVÆ.

This intractable condition, although not a disease *per se*, but merely a symptom of some other latent difficulty, I believe is nevertheless properly placed here for mention. It consists in an increased nervous irritability of the labia, causing a tormenting itching. It is still a mooted question with gynæcologists, whether the disease ever exists except as a symptom, or concomitant, of some other morbid condition.

Causes. Among the causes may be enumerated:

Irritating uterine or vaginal discharges, whether ordinary leucorrheal or cancerous.
Incontinence of urine.
Diabetes.
Inflammation of contiguous parts.
Ovarian and uterine irritation.
Hemorrhoids.
Ascarides.
Pregnancy.
The menopause.
The presence of animal parasites.

Ovarian and uterine irritation, pregnancy and the menopause, operate to produce pruritus in some unexplained nervous conditions at times accompanying those states.

Symptoms. An intense, distressing itching of the parts, which in most cases is only aggravated and intensified by the scratching and friction in which the patient feels abso-

lutely compelled to indulge. In milder cases, it is intermittent, and only troublesome when the system becomes in any way over heated; in more severe cases, its manifestations are confined to the night time; in yet graver cases, the tormenting itching is almost without cessation. The sufferer dreads company, seeks solitude, and becomes a prey to the greatest despondency.

In some cases, the inspection of the parts reveals not the slightest abnormal appearance; in others a scaly or furfuraceous appearance of the nymphæ and labia majora is observable, which condition often appears to be dependent upon the irritation of scratching, rather than to be a necessary concomitant of the disorder.

Treatment. This is often eminently unsatisfactory to both patient and physician. An attempt in all serious cases should be made to discover and remedy the cause. While mild cases yield readily to such means as will be hereafter mentioned, the experience of every practitioner of extensive practice will be that the more severe cases are very intractable.

For temporary relief, the following wash, which is substantially that recommended some years ago by Prof. Meigs, will be often of good service:

℞ Sodæ biborat., ʒj.
Morphiæ sulphat., grs. v.
Aq. rosarum, ℥vj.
M. Sig. Apply on pieces of soft cloth every hour or two. Or instead, we may in the same way use,

℞ Plumbi acetat., ʒss.
Aq. destillat., ℥vj.

Where the cause is an irritating discharge it will usually be found of acid reaction, hence a mildly alkaline solution of bicarbonate of soda may be used as a wash, or application to the parts, and the vagina be syringed out therewith.

Pencilling the parts with a solution of nitrate of silver, grs. v. to x, to distilled water an ounce, has proven beneficial in a number of cases. Dusting the parts over with pulverized opium, or washing with an infusion of the same, has also been serviceable.

But whatever palliative treatment may be adopted, or found useful, curative treatment should be directed to the relief of the cause, if it be possible to detect it. And in this respect it is worthy of note that a very slight and apparently insignificant leucorrhea may be a sufficient cause, and if discovered, should receive appropriate treatment. In some such cases a good palliative procedure may be the introduction of a pledget of lint into the vagina, to receive and absorb the discharge before it reaches the external parts, it being of course necessary to as frequently change it as it becomes nearly saturated.

Many cases will be found to be largely dependent upon nervous influences, perhaps of reflex character, but requiring nevertheless in all cases treatment by the use of such of the narcotics as are found by experience to agree best with the patient, and give greatest relief. Opium in its various preparations, especially the aqueous extract, hyoscyamus, conium, chloral hydrate, and in some cases, the bromide of potassium, lupulin or scutellarin will be found very useful. A decoction of tobacco has been found serviceable as a wash, and Prof. Thomas quotes from the Tribune Med. of Jan. 31, 1869, an interesting case of a pregnant female, who being terribly annoyed by a pruritus of the entire body, found immediate relief from smoking a cigar, the soothing and narcotic effects of the tobacco in this case, proving to be exactly what was needed to allay the nervous excitability.

In pruritus connected with pregnancy and the menopause, I have used with apparently good effect, the syr. mitchellæ comp., also the following:

℞ Ext. viburni op. fl., ℥ij.
Tinct. sumbul, ʒss.
Syr. prun. virg., ℥iijss.
M. Sig. Dose a teaspoonful four times a day.

In all cases the general health should receive our most skilled attention, and such changes in diet and external surroundings as will prove most conducive to perfect bodily health should be prescribed.

LUPUS OF THE VULVA.

This disease is one of considerable rarity; in its general pathological characteristics, it resembles lupus of the face. It has been most frequently observed during the middle years of child bearing life, and is disposed to run a chronic course, embarassing and distressing the patient for years, and when proving fatal, it is through intercurrent peritonitis, fistulæ, and similar complications.

Cures have been effected, according to Grailly Hewitt, after a standing of three years, and amelioration of symptoms after a greater length of time, while its duration may exceed ten years.

Symptoms. A knobby and hypertrophied condition of cellular tissue is accompanied with a thinning of the superimposed integument, and finally ulcerations, which heal with cicatrization and extensive contraction, while the process of ulceration goes on at some other point. In general the disease is painless. Deep seated ulceration, however, may lead to fistulæ, with exhaustion or peritonitis, or the rectum may be contracted to a damaging extent.

Huguier divided the disease into three varieties, the superficial, perforating, and hypertrophic forms.

Prognosis. Perfect recovery is rare, yet much may often

be accomplished towards the amelioration of the patient's condition by proper treatment.

Treatment. A general alterative course long continued, combining a free use of iodine, with the vegetable alteratives, will be found of especial benefit, in connection with attention to the general health. Externally, to the non-suppurating portions, iodine ointments should be freely applied, and upon the ulcerating surface a dressing of iodoform. Extirpation of the nymphæ or other parts affected, capable of removal, has been recommended, by means of the actual cautery, or some rapidly acting caustic like the potassa fusa or fuming nitric acid.

CONDYLOMATA OF THE VULVA.

Warty excrescences of the vulva are frequently met with, and may be of syphilitic or non-syphilitic origin. They may be solitary or very numerous and large, and in syphilitic or gonorrheal cases, will usually be found the seat of an offensive discharge. Non-syphilitic warts resemble the warts found on other parts of the body, except in their greater smoothness and regularity of surface.

Treatment. I have rarely failed to remove these excrescences with a concentrated solution of muriate of ammonia. Failing in this, or requiring greater expedition in treatment, the knife or scissors should be resorted to, the cut surface being touched with a pine stick dipped in strong nitric acid, or a few crystals of chromic acid may be applied. It is advisable in operations of this character, to place the patient under the influence of an anæsthetic, that the operation may be fully and deliberately completed. In syphilitic cases appropriate alterative treatment should be adopted.

HYPERÆSTHESIA OF THE VULVA.

The subjects of this disorder, who come to the practitioner for treatment, are usually married women.

Symptoms. A peculiarly painful or sensitive spot upon some portion of the vulvar orifice is complained of, but upon examination, neither redness, swelling nor any visible lesion is apparent. The sensitiveness of the parts prohibits copulation and proves a cause of sterility. The absence of all visible or tangible indications of disease will at once direct the attention to its nervous origin, as also the fact that the position of the sensitive portion often changes. A neurosis of the pudic nerve, in some of its ramifications to the parts, is the immediate cause.

Treatment. The general constitutional treatment for neuralgia should be adopted. Iron, belladonna, muriate of ammonia and tonics generally may be mentioned as some of the means that it will be advisable to try, of course paying due attention to the general health. Phosphorus in pill form, and the phosphide of zinc, are remedies especially adapted to the condition under consideration. It is possible that an application of some of the narcotics, as stramonium, belladonna, or tobacco to the parts, in the form of poultice or ointment, would be attended with some benefit as a palliative measure, but I have never tried them.

Failing in other treatment a division of the affected nerve should be resorted to. This may be accomplished in two ways. An incision is made to the depth of one or two lines in the lateral border of the vagina, and extending upwards half an inch from the ostium vaginæ; or, as recommended by J. Y. Simpson, the nerve may be divided subcutaneously with an ordinary tenotome.

FISTULÆ OF THE VULVA.

Owing to the loose cellular structure, underlaying the integument of the labia majora, fistulæ are occasionally formed reaching into the anus, in this respect being like the complete fistulæ, whose external orifice may, in male or female subjects, be located at various points in the buttock surrounding the anus; or it may be incomplete, and consist of ramifications more or less extensive and branching, which terminate in some portion of the deep seated structures of the labia.

These troublesome difficulties usually are the sequelæ of labial abscesses, whose thorough evacuation has not been secured in a timely manner. When the labial abscess is left to be evacuated by an opening of Nature's establishment, or where the opening made by the surgeon has been insufficient, and has from any cause closed up too rapidly, there will always be a tendency to the establishment of a fistulous channel. The diagnosis is not at all difficult, in fact it is impossible to materially err upon the subject.

Prognosis. Usually favorable.

Treatment. The same general treatment applicable to fistula in ano, modified according to the circumstances of the case, will be successful here. The injection of a solution of the sesquicarbonate of potassa, ten or fifteen grains to the ounce of water, repeated daily, has in the majority of cases proved a sufficient and successful plan of treatment. I am unable to assign a reason why this remedy should prove better than the permanganate of potassa, or the sulphate or chloride of zinc, but in my hands it has.

From a general knowledge of its effects I should anticipate a favorable effect from the use of iodoform in concentrated solution. Tincture of iodine is strongly recommended by Prof. Simpson. Failing in obtaining relief by these

means, a silver wire or silk thread can sometimes be introduced and allowed to remain long enough to induce absorption of the callous structure, when healthy granulations may be expected to spring up and permanently close the fistula. Should the fistula consist of a single canal, running a not too tortuous course, we may be able to carry this plan to a successful termination, but if the canal be tortuous and branching in numerous directions, it will be found impossible.

Having failed by the means already mentioned, division of the structure with a bistoury, as in ordinary *fistula in ano*, is a promising resource. Considerable hemorrhage must be anticipated and provided for, by the torsion or ligation of vessels which bleed too profusely, or by the application of styptics, cold, etc., etc.

CHAPTER VI

RUPTURE OF THE PERINEUM.

The obstetrical perineum, alluded to in this accident, extends from the posterior wall of the vagina to the anterior verge of the anus, and measures from an inch to an inch and a half, varying somewhat in different subjects. Beneath the integument it consists largely of the somewhat dense and firm fibrous structure, produced by the interlocking of the tendinous fibers of the symmetrical muscles occupying each side; and which are the sphincter ani, sphincter ani internus, sphincter vaginæ and transversus perinei muscles. The sphincter ani is a thin plane of muscle immediately underlaying and somewhat adherent to the integument, and surrounds the anus. Posteriorly it arises from the apex of the coccyx and the fibrous fascia surrounding

that bone, and is inserted anteriorly in the tendinous center of the perineum, the fibers of each side thus meeting those of the opposite.

The sphincter ani internus is deeper seated, and surrounds the extremity of the intestine, being formed by an aggregation of the circular fibers of the rectum.

The sphincter vaginæ arises by an interlacing of fibers in the center of the perineum with the fibers of the sphincter ani, and passes forwards to find an insertion in the sides of the corpora cavernosa and fascia surrounding the clitoris.

The transversus perinei arises from the internal face of the tuberosities of the ischia upon each side, and is inserted into the same central tendinous formation of the perineum, and into the sides of the sphincter vaginæ muscle.

It will be obvious, therefore, from a consideration of the anatomy of the parts, that an antero-posterior division of the perineum will, from the natural contraction of the fibers of those muscles, be made to gap open not inconsiderably. Where the laceration is complete and includes the sphincter ani muscles, it is evident that the unfortunate subject will lose all control of the movements of the bowels, and not only will flatus, but their more solid contents be passed involuntarily, and by the disagreeable and filthy condition and smell cause the patient to become almost an object of loathing and disgust to herself and nearest friends.

Nor is this all. The perineum closes the outlet of the pelvis, and is the natural and almost sole antagonist to the action of the abdominal muscles, and as it is also the base for the support of the vaginal column, now believed by most uterine pathologists to be one of the chief supports of the uterus, it will be seen that prolapsus and even procidentia uteri may follow logically as they do practically.

Causes. Rupture of the perineum rarely occurs except during and in consequence of labor. The removal of large tumors from the pelvis has been spoken of as a cause, but it

must be an extremely infrequent one. Falls and striking the perineum upon some projection, as the pommel of a chair, etc., etc., have been known to cause this laceration. Regarding its most common occurrence during labor, it is worthy of consideration that there are certain causes which may be termed predisposing, and others which are immediate. Of the predisposing causes may be noted:

1st. Too rapid labor.
2nd. Unnatural smallness of the ostium vaginæ.
3rd. Rigidity of the perineum.
4th. Rigidity of the parts from youth or age.
5th. Morbid condition of the parts.

Too rapid labor. Even though the perineum may possess a fair degree of ability to dilate, time is always necessary for its successful accomplishment. Of course this does not refer to the individual cases which every practitioner meets, wherein the perineal structure is so loose and relaxed that the fetal head may pass with great rapidity without serious consequences, but the statement applies to the large majority of cases. When, then, from excited spasmodic action of the uterus, whether arising spontaneously or in consequence of the administration of ergot or other medicines, especially if aided by the almost desperate semi-voluntary efforts sometimes made by the patient, we have the presenting part of the child brought rapidly down upon the perineum, it is quite likely that that structure will suffer injury in some degree.

Unnatural smallness of the ostium vaginæ. Whether owing to natural defect, or youth of the patient, and consequent immaturity of development, it is obvious that lacerations will be favored by this condition.

Rigidity of the perineum. Whether resulting from unknown causes or from youth, and especially from advanced age, rigidity of the perineum is a prolific source of this dis-

aster. In accordance with this fact, it is well known among obstetricians, that a large share of these lacerations occur to primiparæ. Owing, too, to excessive acuteness of the angle of union of the pubic bones, the head may be forced backwards against the perineum, thus endangering it.

Morbid conditions of the parts. The various diseased and unnatural conditions of these parts, which may be present in consequence of extensive syphilitic or gonorrheal inflammations, the ordinary affections and diseased conditions to which this part of the body is as liable as any other, and possibly the subjects of previous lacerations where operative procedures have restored so far as is possible the original condition of the parts, constitute a tendency to laceration.

The *immediate* causes are:

1st. The passage of the fetal head and shoulders.

2d. Instrumental or manual interference.

The head, being the largest and most unyielding portion of the fetus, may at the moment of the completion of extension, as the forehead passes the posterior commissure, cause laceration. Much more likely still, should the position be one of those terminating with the forehead under the pubic arch, will laceration occur owing to the immense strain brought to bear during the necessary forced flexion. But even should the head pass in safety, the simultaneous passage of both shoulders may precipitate the trouble so much to be avoided. So commonly indeed has this cause been effective that some authors have considered it the most common one.

Operative interference. This being resorted to usually only in cases presenting some difficulty, which difficulty may consist in an unusually large head, or some deformity of the pelvic bones, such as for instance that already spoken of, too acute an angle of union of the pubic bones, some degree of laceration may at times be possibly, almost unavoidable.

Yet I must say, that in some cases which have come under my observation, I believe the laceration was caused more through incompetency or carelessness of the operator, than from any necessity of the case.

Prevention. Although in a measure intruding upon the province of midwifery, upon the ground that prevention is better than cure, this subject is briefly introduced. In the matter of support of the perineum, authors have differed very widely; some contending that the practice was of doubtful utility; others that the patient should always lie upon the side, thus relieving the perineum of the weight of the child in passing, etc., etc. My own belief, deduced from a quite extensive experience, is that a proper support is useful; that with it position is entirely unimportant; and for convenience I prefer the dorsal position. Whatever position may be assumed, the support is best made with the hand direct, the fingers being placed upon one side of the perineum just behind the posterior commissure, and the thumb with its fleshy metacarpal portion upon the other. In this way the entire grip of the hand may be made to supplement the perineal *raphe*, and assist it in drawing contiguous tissue toward the center, while the pressure should direct the hand towards the pubic symphysis with a force at least equal to the weight of the head. At the same time, should the action of the uterus be very energetic during the last expulsive actions, the patient should be gently quieted, and caused to abstain from violent expulsive efforts supplemental to the uterine contractions.

After the passage of the head, if it be held towards the pubic symphysis after restitution has occurred, the premature passage of the shoulder there engaged will be retarded, and thus the chances for injury during the passage of the shoulders be reduced to the minimum. In all cases of rigidity avoid the use of ergot, and to overcome rigidity,

when simpler means are inoperative, never forget that chloroform seldom fails. And lastly, where a rupture seems imminent, it may often be avoided by directing it laterally, by snipping the lateral borders of the ostium vaginæ with scissors to the extent perhaps of no more than a quarter of an inch. Any rent that follows this proceeding heals kindly, without operative interference or inconvenience to the patient.

Diagnosis. In this there can be no mistake; it is upon inspection self-evident.

Extent. Lacerations of the perineum may be of every grade of extent, from the simple tearing of a little tissue posteriorly to the vagina, to the frightful and extensive separation of tissue which completely divides the sphincter ani muscles, and laying open the rectum, converts the orifices of the vagina and rectum into one large, gaping, irregular opening. Neither is it an unknown circumstance that, owing to the strength and rigidity of the sphincter vaginæ, the fetus has carried before it the posterior wall of the vagina, and perforated it and the perineum at a point between the ostium vaginæ and anus.

Treatment. The treatment must necessarily vary according to the extent of the injury. If the rent extend but a short distance backwards, it may be best treated by position only. To make the matter tangible it may be said, that where the lacerated surface, seen immediately after parturition, is less than one inch, the patient may be laid upon the side, so as to favor the passage of the lochia anteriorly; bind the knees together and use the catheter at least twice daily; restrain the action of the bowels for three or four days by the administration of opiates and the ingestion of small quantities of fluid food only. The parts should be daily cleansed with castile or juniper tar soap. In this way a very fair result may be anticipated.

It should be borne in mind, in adopting this treatment, that the limit of extent above given will be too great if the case be first seen a day or two after parturition, as by that time the reduction of the swelling in the labia will have reduced the original size of the rent quite considerably.

In cases, however, where more extensive operative interference is necessary, it often becomes a question whether the operation should be immediate or remote. In the first case, there is the advantage that the surfaces are fresh, and merely require to be brought and retained in apposition. Occasionally, too, it may be that the patient is already anæsthetized, or if not, the great pressure to which the parts have recently been subjected has more or less completely deprived them of sensibility, and the operation once successfully carried out, she rises from the parturient bed well. On the other hand it is not usual, perhaps, to be fully prepared with the necessary appliances for most successfully meeting such an emergency; the operator, conscious that an attack of hemorrhage, or some other parturient accident, may come on, feels more hurried, and does not give the operation the detailed attention he would under more favorable circumstances; and if some puerperal inflammation do not occur to thwart his best laid plans, the lochial discharge, bathing the wound may, by its acridity, prevent union and cause failure. If the time for immediate action have passed, or it be decided to adopt the plan of a later operation, a sufficient time should be allowed to elapse for the patient to attain a good degree of usual health, perhaps six to eight weeks, by which time the involution of the uterus will be well nigh accomplished. The system should be previously well prepared, and the contents of the bowels evacuated the night before by a cathartic. The patient, previously brought under the influence of an anæsthetic, is placed in the lithotomy position, and the surfaces to be approximated are freshened by the removal of all cicatricial tissue and mucous

membrane which has been formed. This is the most difficult part of the operation, and ultimate success depends upon its faithful performance. A keen scalpel, assisted by dressing forceps, may be used, or suitable scissors, according to the preference and fancy of the operator.

The next step is the introduction of the sutures, of which usually three should be placed deeply, nearly to the bottom of the wound, entering the sound tissue three-fourths of an inch or an inch from the edge of the cut.

Fig. 19, represents a curved needle upon a handle, designed for carrying the deep seated sutures.

Fig. 19. Perineum needle.

Silver or iron wire, or carbolized catgut should be used, and the ends may be secured by clamping upon them perforated shot; or they may be passed through small lead plates and secured; or the quilled suture may be used, the object to be attained being the close apposition of the surfaces, without causing an undue pressure upon the tissues, neglecting to attend to which having resulted in sloughing of the parts. Between the deep seated sutures a sufficient number of superficial stitches should be taken, to bring the integument properly in place. The knees should be tied together, and the patient kept in perfect quiet, the bowels kept at rest by a sufficient opiate, and the catheter used at least twice daily. A dry dressing, consisting of soft linen or charpie, changed as often as it becomes moistened, will usually prove best. In all cases, but especially where the quilled suture is employed, constant attention is required to the condition of the parts, which are liable to swell consid-

erably, rendering it necessary to loosen the stitches. Inattention to this point may result in disastrous sloughing.

The food should be fluid, light, nutritious and small in quantity. After five days the bowels may be carefully moved by an enema. The deep seated sutures should be removed on the third or fourth day, the superficial may remain indefinitely longer, depending upon the circumstances and the general appearance of the wound. The division of the sphincter ani muscles, by two posterior lateral incisions, has been recommended and practiced by some surgeons as a means of keeping more perfectly at rest and approximating the muscles of the perineum, but the procedure may be considered as unimportant and seldom if ever necessary.

Prof. A. J. Howe thus describes a plan he has adopted for the closure of ruptured perineum by a plastic operation:

"For the last year or two I have modified the old plan of closing a ruptured perineum. We used to pare the edges or borders of the chasm, and then join the freshened surfaces with sutures. As this plan was apt to fail, I resolved to improve upon the operation, if possible. The modification I have introduced is not easy to describe, but I will call attention to its leading feature. Instead of removing any tissue in the freshening process, I save it all to constitute a winged flap, which has its basal attachment in the floor of the vagina, and rests against the seam after the sutures have drawn the traumatic surfaces in contact along the median line. The wings of the flap shrink, but enough tegumentary tissue is left to cover and shield the seam on the vaginal aspect of the wound. The flap is constructed by beginning at the tegumentary border of the chasm, on each side, and dissecting towards the vaginal edges of the rent, going deeper as the wings of the flaps extend upwards or inwards to the deep recesses of the chasm. Care is needed in dissecting up the bottom of the fissure, lest the flap be punctured or the rectum cut into. I think that Prof. Hodgen, of St. Louis,

performs a similar operation, yet I can not determine, by his description, how near the two operations correspond. As I intimated before, this is a difficult operation to describe in words, or to illustrate with drawings; but if the leading feature of the operation be caught, the plan can be readily executed the first time trying. The deep and shallow sutures are to be of silver wire, and fastened with twists of their ends, after having been drawn so as to approximate the traumatic surfaces snugly. Quilled sutures are not necessary. The limbs of the patient are to be kept together for seven or eight days. The sutures may be removed on the tenth day. A self-retaining catheter should be employed; and the bowels must be kept from moving by the use of opium."

CHAPTER VII.

INFLAMMATION OF THE URETHRA.

Inflammation of the urethra may be either acute or chronic.

The causes of acute inflammation are:

1st. Sudden colds.
2d. Excessive venery.
3d. The specific poison of gonorrhea.
4th. Masturbation.
5th. An intensely acid condition of the stomach.
6th. Blows or violence to the parts.
7th. The pressure of the child's head during labor.
8th. The pressure of instruments in instrumental labors.

Symptoms. A sensation of heat, frequent desire to pass

urine, ardor urinæ, and in some cases, especially nervous women, fever. The meatus urinarius looks red, swollen, everted, is sensitive to the touch, and soon becomes moistened with mucus, which in turn gives way to a purulent or semi-purulent discharge. The finger introduced in the vagina detects the round, hard swollen urethra, feeling at times nearly as large as the little finger. Digital examination or coition causes pain. Although the subject of much patient investigation and research, I believe we are still without positive means to in every case diagnose simple, from infectious, specific or gonorrheal urethritis. It is true, that in gonorrheal inflammation the vagina is usually affected, even to the exclusion of the urethra, but I feel confident that the urethra may suffer from gonorrheal infection, without implicating the adjacent vagina; and where such an affection exists, nothing but a concise, clear and positively truthful history of the case can enable the practitioner to pronounce a positive diagnosis. As however the treatment does not materially vary, the point is usually non-essential.

Treatment. Rest in a recumbent posture will be found a valuable adjuvant to whatever treatment is instituted. If feverishness be present, it should be controlled with aconite; if the bowels are constipated, a saline laxative or cathartic, as a Seidlitz powder or one or two drams of Rochelle salts. An infusion of spearmint, cleavers, marsh mallows, parsley or flax seed, should in the first stages be drank as freely as possible. Fomentations of stramonium, poppy leaves or hops should be applied to the vulva, usually warm, but occasionally cold, according to which gives greatest relief, and feels most agreeable. Severe pain should be controlled by some anodyne. In cases accompanied by febrile excitement, the tincture of gelseminum in five to ten drop doses, repeated every two hours, acts efficiently as both a febrifuge and anodyne. In the later stages, and after secretion has be-

come established, injections should be made into the urethra two or three times daily, of the following:

℞ Zinci sulphat., grs. xx.
Morph. sulphat., grs. vj.
Aq. font., ℥vj.
M.

Or instead, we may use:

℞ Bebeerinæ sulphat., grs. xij.
Morph. sulphat., grs. vj.
Aq. font., ℥vj.
M.

Of either of these preparations, one or two drams may be used at each injection, or an infusion of hydrastis, to which sufficient morphia has been added to secure an anodyne effect. If the urine be found, upon testing with litmus, to be strongly acid, an occasional draught of water made mildly alkaline with bicarbonate of soda, will be beneficial. The diet should be light, easily digested, and calculated to relieve any disorder of digestion which may be present, perhaps as a cause.

CHRONIC URETHRITIS.

Symptoms. Scalding pain in passing urine, frequent desire to micturate, a sensation of heat, a feeling of tension and swelling, a slight tenacious discharge, usually most perceptible in the urine voided; *physically*, the reddened, swollen, everted meatus urethræ; the urethra swollen and sensitive to the touch; in short, substantially the same symptoms that characterize the acute form, but manifesting less severity, and continuing with some variation indefinitely.

Treatment. Very many cases meet with prompt and happy relief from the administration of the tinct. of elaterium, in doses of from four to six or ten drops, three or four times a day, stopping the increase of dose just short of purgation. Of course any known cause must first be eliminated.

Similar injections to those recommended in the acute form will be found useful, or perhaps better, the following:

℞ Hydrastis pulv., ʒvj.
Zinci sulphat., grs. xij.
Morphiæ sulphat., grs. vj.
Aq. font., ℥vj.
M.

Of this let one or two drams be thrown into the urethra twice daily. The thick consistent character of this injection seems to keep its constituents for some time in apposition with the inflamed membrane, thereby securing the full benefit of their application. Mucilaginous diuretics should be freely used, and a solution of gum arabic drank freely, is often of great benefit.

STRICTURE OF THE URETHRA.

Stricture of the urethra is much less common with females than males, owing in part to the much shorter length of that organ. Again, the most common cause of stricture in the male urethra is gonorrheal inflammation, or more probably the injudicious use of irritating injections used in its treatment, and as the female urethra is only casually affected by gonorrheal inflammation, and not then liable to the injudicious use of injections, it enjoys immunity.

Causes. Acute, simple or specific inflammation may be followed by strictures, especially when treated by the injudicious use of injections of a harsh or over stimulating character; and inflammation from the use of instruments in the vagina or urethra, or from whatever cause, may terminate in stricture.

Symptoms. A scanty or dribbling flow of urine, occasioning difficulty in passing it, only in cases of a most aggravated nature causing a complete stoppage. It must be differentiat-

ed from calculus in the bladder, from polypus or other growths in the urethra, or at the base of the bladder, and from tumors affecting adjacent structures and causing pressure upon the urethra.

It will be distinguished from calculus in the bladder, by observing that in calculus there is frequent desire to micturate, accompanied by more or less irritation, and that at times the flow is free and natural, being suddenly partially or completely checked by the apposition of the calculus to the internal orifice of the urethra; from calculus in the urethra by the much greater amount of irritation and pain in calculus, on passing water; and from both by the introduction of a metallic sound, when the calculus will seldom fail to be recognized by its firm gritty feel.

Treatment. When requiring treatment, the plan of dilation will be found efficacious and of much easier application than in the long and curved passage of the male urethra. Naturally the female urethra is much more easily dilated than the male, and bougies or sounds of convenient and increasing sizes will be found all the apparatus required. Ordinarily the female urethra is capable of very great dilation, and this property is a factor in the dilation even of the strictured urethra. Anæsthesia will usually be an important assistant in the operation.

DILATION OF THE URETHRA.

Foreign substances frequently find lodgement in the bladder, such as pieces of wood, slate pencils and similar bodies, and more than once it has happened, that the surgeon in introducing a catheter, has had the misfortune to slip it completely into the bladder. Such foreign bodies, if allowed to remain, give rise to symptoms similar to those attending ordinary calculus in the bladder. They moreover usually become incrusted with a calcareous deposit, thus forming a

nucleus for a calculus. Calculi also may require removal from the bladder, and cystic polypi have occurred demanding removal. It may also be desirable to explore or examine the interior of the bladder with the finger or endoscope.

For such purposes the female urethra may be very rapidly dilated by placing the patient under an anæsthetic, and introducing dilating sounds in rapid succession. The entire dilation may be accomplished with sounds, or the latter part of it may be effected with a Molesworth's dilator. In this way five to ten minutes only will be required to produce a sufficient dilation to permit of the introduction of the finger for exploratory purposes, or a forceps to seize foreign bodies. Some slight hemorrhage may occur, but although a degree of dilation remains for a day or two, incontinence of urine is not liable to follow.

EVERSION OF THE URETHRA.

Eversion of the mucous membrane of the urethra has occasionally been observed not only in adults, but also in children.

Causes. A relaxed condition of the membrane from long continued catarrhal discharge, and in children of strumous habit, the tenesmus incident to dysentery, teething diarrhea, ascarides, etc., etc.

Symptoms. A pale red or darkish red tumor, situated at the orifice of the urethra, sometimes becoming painful and inflamed. It should not be mistaken for urethral caruncle or vascular tumor of the urethra, from which it may be distinguished by close examination and final reduction.

Treatment. Return the everted membrane, and apply small pads of linen wet in cold water to keep it in place and enforce rest. Infusions of hamamelis, coltsfoot, (tussilago,) hydrastis, or mangifera indica or the fluid extracts of these

remedies diluted with water, will be found useful as applications, being if necessary injected into the urethra.

VASCULAR TUMOR OF THE URETHRA.

Synonym, urethral caruncle.

Description. A small growth springing from the meatus urinarius, and at times seeming to extend backwards to near the anterior border of the ostium vaginæ, usually compressed between the sides of the vulva, and therefrom presenting a flattened appearance. It arises from a broad base, is usually largest at the base, but may be pediculated, and at times extends into the urethra, or is almost or entirely situated within that passage. Its color is of a much deeper red than the surrounding parts, and it is exceedingly sensitive to the touch.

Symptoms. If the location be within the urethra, painful micturition will probably be one of the symptoms present, and attention may first be called to it by a gradually decreasing ability to pass water in a full stream, great pain during its passage and a desire to micturate very frequently. Wherever situated, coition will be so painful as to probably be prohibited. Pain on walking is usually present, and while in size it may vary from that of a mustard seed to the dimensions of a hazel nut, it is undoubtedly true that no affection peculiar to females, presenting physical appearances of such a diminutive character, is at all comparable with this in the magnitude of inconvenience and discomfort caused by it. It therefore becomes a matter of no small importance.

Cause. Unknown. It appears to be an excrescence, or vegetation, springing from the mucous membrane, and, according to Hewitt, it consists of "a hypertrophy of the mucous papillae of the part." Occasionally they have seem-

ed to supervene upon some surgical operation, where the catheter was necessarily retained for a length of time, which would seem to point to a traumatic origin, or some injury or pressure interfering with the normal circulation of the blood in the parts, a supposition which is emphasized by the fact that they have been known to disappear after the removal of vaginal and hemorrhoidal tumors.

The presence of an enlarged or chronic inflamed uterus I believe, by its derangement of the circulation throughout the pelvis, may produce and render intractable this difficulty; also pelvic and ovarian tumors.

Pathology. These vascular growths or caruncles seem usually to be very thoroughly supplied with blood vessels almost capillary in size, and no inconsiderable hemorrhage may follow their disturbance. From their general great sensitiveness it would be supposed that they were well supplied with nerve filaments, a supposition, however, which has not been very satisfactorily verified.

Diagnosis. Nothing short of ocular examination can determine their existence, and they are liable to be confounded only with eversion of the urethra, from which non-reducibility and general greater pain and distress will prove sufficient distinctions upon which to base a diagnosis.

Treatment. The treatment is simple, but its results not always satisfactory, inasmuch as after removal their recurrence is no uncommon event. To trifle with them is useless, and only subjects the patient to increased sufferings. The most soothing and anodyne applications that can be devised, seem to cause rather than subdue sensibility and pain. They should be seized deeply with toothed forceps, and if possible without rupturing them be thoroughly dissected out with scalpel or scissors, and their site well cauterized with a pine stick dipped in strong nitric acid, which is preferable to the nitrate of silver, from its more rapid and energetic action,

and better than the potassa fusa, which is not easily controlled.

Should the growth recur, resort must be had to the same treatment, taking if possible more pains to make the operation thorough. A close inspection of the mucous membrane surrounding the parts will sometimes disclose the presence of numerous minute specks, of a florid red color, so small as to escape a superficial examination. These minute specks will be found to be very sensitive upon touch, and in fact seem only lacking in development, to be properly considered as vascular tumors. It is therefore not improbable that in some cases their development may account for recurring caruncle, and in the first operation for the destruction of the tumor, each of these spots discovered should be touched with nitric acid.

VAGINISMUS.

The ostium vaginæ is surrounded and kept partially closed by muscular fibers, having their origin in the central *raphe* of the perineum, with the insertion of the sphincter ani and transversus perinei muscles, and their insertion anteriorly in the cruræ clitoridis; to which the name of the sphincter vaginæ muscle is naturally given. A spasmodic and painful neurosis of this muscle has received the names of *vaginismus* and *spasm* or *hyperæsthesia of the vagina.* This difficulty, in one degree or another, is far from a rare condition, constituting in its several forms a complete barrier to coition. In point of duration it may exist for years, unless in some way relieved.

Symptoms. The least touch upon the parts is sufficient to cause with pain a spasmodic closure of the orifice of the vagina, rendering the introduction of the finger for diagnostic purposes an impossibility, until anæsthesia is induced. In some cases the sensitiveness will be limited to a very

small spot, no larger perhaps than the end of a black lead pencil; in others the entire mucous membrane surrounding the vagina, will be found in this condition of hyperæsthesia. A slight touch may be more painful and distressing than more rude or vigorous handling.

Diagnosis. It is only necessary to observe, with the symptoms above enumerated, that there is no evidence or appearance of inflammation of the parts. The color is natural, and the history of the case does not point to any injury or cause of inflammation. Beyond this there can be no cause for error, as no other affection could be mistaken for this.

Treatment. Two different plans of treatment have been followed, strangely enough it would seem, by about the same degree of success, and by either plan the chances are almost a certainty that relief will be obtained. In the first place it should be remembered that the difficulty is often symptomatic of some deranged condition of the uterus, vagina, ovaries, etc., etc., and search should be made for the primary difficulty, that it may be discovered and relieved, if possible. Failing in this, or deciding to adopt more direct treatment, the pudic nerve may be divided, as recommended in hyperæsthesia of the vulva, page 71, or Dr. Sims' operation for the division of the sphincter vaginæ may be practiced. This operation is performed in the following manner: (Sims' uterine surgery, page 327.)

"Place the patient (fully etherized) as for lithotomy, on the back; pass the index and middle fingers of the left hand into the vagina, separate them laterally, so as to dilate the vagina as widely as possible, putting the fourchette on the stretch; then, with a common scalpel, make a deep cut through the vaginal tissue on one side of the mesial line, bringing it from above downwards, and terminating at the *raphe* of the perineum. This cut forms one side of a Y.

Then pass the knife again into the vagina, still dilating with the fingers as before, and cut in like manner on the opposite side from above downwards, uniting the two incisions at or near the *raphe*, and prolonging them quite to the perineal integument. Each cut will be about two inches long, *i. e.* half an inch or more above the edge of the sphincter, half an inch over its fibers, and an inch from its lower edge to the perineal *raphe*. Of course this will vary in different subjects, according to the development of the parts in each. To perfect the cure it is necessary for the patient to wear for a time a properly adapted bougie or dilator." Fig. 20. "I use a dilator made usually of glass, sometimes of metal or ivory. I prefer glass, because it is easily kept clean, and

Fig. 20. Sims' dilator.

being transparent, it is easy to see the cut surface, and indeed the whole vagina, without removing it. If there is much bleeding, I introduce the dilator at once; but usually I wait twenty-four hours, when it is worn one, two, three or four hours at once. Its introduction is attended with a sense of soreness, but with none of the peculiar agonizing suffering so charactertistic of the original disease."

The depression seen in the cut is for the accommodation of the urethra, and also assists in retaining the dilator in position. The dilator is worn three or four hours daily, for perhaps two or three weeks, or until the parts have entirely healed, it being advisable to divide the daily time of wearing the dilator, by using it one or two hours in the forenoon and a perhaps equal time in the afternoon.

The operation is simplified by Dr. Emmett in this way:

The preliminary steps being the same, the index finger is introduced within the vagina, and the sphincter vaginæ elevated upon the finger, is cut through with strong scissors upon each side of the perineal *raphe*. The subsequent treatment by dilation is conducted in the same manner as advised by Dr. Sims, it being desirable to secure a degree of dilation which will allow of wearing a dilator with a diameter of from one to one and a half inches.

The other plan of treatment discards the cutting, yet appears in many instances to be quite successful. The patient should use for ten days or two weeks, warm sitz baths, for ten or fifteen minutes, morning and evening. Narcotic salves, containing aqueous extract of opium, extracts of hyoscyamus, stramonium, belladonna, tobacco, and the like are applied, and when they can be borne, similar remedies in the form of suppositories are introduced into the vagina and perhaps also the rectum. At the same time, glass dilators as large as can be used, are to be daily introduced, and worn for such length of time as circumstances will permit. Where the difficulty seems limited to a small patch of mucous membrane, it may be dissected off, and the cut edges be brought together with sutures, the prospect being good that a cure will result. And lastly, such changes in habits and manner of living as can be commanded, and will improve the general health, should be prescribed. During all treatment marital intercourse must be prohibited.

CHAPTER VIII.

FISSURE OF THE VAGINA.

The vaginal orifice is occasionally the site of a troublesome, indolent ulcer, or fissure, quite analogous to fissure of the anus.

Causes. Fissure may result from imperfect healing of the parts after forcible dilation, or in the treatment of vaginismus, or from a laceration occurring during parturition.

Symptoms. Pain in walking or in any way causing motion of the parts; smarting or pain upon the passage of water from the contact of urine; and coition may cause unendurable suffering.

Diagnosis. As digital examination can only reveal a sensitive spot, usually at the posterior border of the ostium vaginæ, inspection of the parts is necessary to complete or perfect the diagnosis.

Treatment. First convert the indolent ulcer into a recent one, by a shallow incision through the indolent or cicatricial tissue, by cauterization with nitric or chromic acid, or by forcibly stretching or dilating the part, so as to tear through the diseased to the healthy tissue. Dressing with mild zinc ointment, two or three times a day, will complete the cure.

VAGINITIS.

Inflammation of the mucous membrane, lining the vagina, may be acute, chronic or specific.

Acute vaginitis is a rare disease, but may arise from colds, excesses in coition, a strumous diathesis, or contact with

irritating or caustic remedies in their application to a diseased uterus.

Symptoms. A sensation of heat, fulness and throbbing, for the first few hours dryness of the parts, followed by a secretion, at first glairy, and resembling the white of an egg, but becoming gradually more opaque and darker, running through the various shades of yellow, sometimes to almost green, and becoming ultimately muco-purulent. With this a scalding upon passing water, with frequent desire to micturate, pains through the loins and in the perineum, and often swelling of the labia are present, with excoriation of the mucous membrane of the vulva. The vagina is sensitive to the touch, feels hot, and upon inspection appears tumefied, unnaturally red, and presents patches where the mucous membrane has been abraded. Unless sooner relieved by treatment, the disease terminates in recovery spontaneously, in from ten to fourteen days, or passing into the chronic form, continues indefinitely. It is possible for the inflammation to extend to the urethra, the uterus, or even the Fallopian tubes.

Specific vaginitis. This term is applied to cases arising from the specific poison of gonorrhea. In its symptoms, it so intimately resembles the simple acute form, that no physical diagnosis is as yet possible. If a perfectly truthful history can be obtained, the diagnosis may be made almost conclusive, unfortunately this is often difficult to get, but upon the other hand, the treatment is so similar, that there can be little practical difference. Generally speaking, the specific form presents a greater intensity of symptoms, a more profuse secretion of muco-pus is present, and the disease is transmissible by coition; yet unmistakably all these symptoms may present in the simple form. Thomas states that he has seen all these characteristics present in two cases of vaginitis, resulting from the application of chromic acid, and

I have myself seen several similar cases, where I had no reason to doubt the chastity of both parties. I have never known the complication of bubo present in any but the specific variety.

While occasionally, by extension to the peritoneum, through the uterus and Fallopian tubes, the disease is fraught with the most serious consequences, it will nevertheless not escape the attention and experience of the practitioner, that women may suffer from this form of vaginitis for years without very material discomfort.

Granular Vaginitis. This term has been applied to a form of vaginitis consisting essentially in a hypertrophied condition of the mucous glands of the vagina. It is very rarely met with except in connection with pregnancy, and some individuals are affected with it at each succeeding pregnancy.

Symptoms. The prominent characteristic is only developed by inspection, when the small red granular points thickly studding the vaginal surface, and even the cervix uteri, are easily discovered. No very decided inconvenience is caused by the difficulty, unless at times when the discharge present, assuming an ichorous character, causes pruritus; the disease terminates with the pregnancy which it accompanies, seldom therefore demanding any treatment.

Adhesive vaginitis. Yet another form of vaginal inflammation exists, to which, from its most prominent characteristics, the name of *adhesive vaginitis* has been applied. In its infantile form the inflammation is generally confined to the orifice of the vagina and tends to cause a complete closure. If these adhesions be broken up with a probe, which they easily can be, they rapidly form again and again, unless kept apart by the insertion of a pledget of lint dipped in some carbolized oil, or by some similar means. In these cases an adhesion takes place between the opposing sides of

the vaginal canal, without, however, constriction of its caliber.

In its adult form these differences are manifest, that the inflammation originates at or near the upper part of the vagina, whence it travels down, causing great constriction, but seldom obliteration of the passage. A case of this kind I recently saw with my friend Prof. Jay, the patient being a married woman, and the difficulty having followed an attack of fever several years previously. At a distance of about two and a half inches from the external opening the vagina terminated apparently in a blind pouch. The speculum revealed a small aperture, through which menstruation was carried on, and which afforded with some difficulty passage for a small uterine sound. Rectal examination revealed the uterus beyond, and with one finger in the rectum and another of the opposite hand in the vagina, the constricted portion could be quite accurately determined to be about half an inch. Dilatation with tents, and later on division of the cicatricial band with a bistoury, entirely remedied the difficulty.

These adhesions frequently give way when not too inveterate in attempted coition; they may often be easily divided by the pressure of the finger, and should they exist with pregnancy, the advance of the fetal head seldom fails to open them up without disastrous consequences.

Occasionally the occlusion of the vagina is from this cause complete, and retention of the menstrual fluid results.

Treatment. The various forms of acute vaginal inflammation may be treated upon the same general principles. In the first stage general febrile excitement may prevail, and will require the sedative treatment appropriate to febrile action, the administration of veratrum, aconite or gelseminum, either singly or combined, according to the best judgment of the practitioner. A vaginal injection, consist-

ing of an aqueous infusion of opium, with mucilage of slippery elm or flax seed, should be used, of the temperature most agreeable, usually warm, and this should be repeated every hour or two, according to the severity of the symptoms and the effect, which should be the moderation or relief of pain and the establishment of the discharge. Should irritation of the urethra be present, the patient should drink freely of infusion of marsh mallows (*althea off.*,) cleavers (*galium*,) solution of gum arabic and similar demulcents. Upon the subsidence of the active symptoms the injections should be changed to an infusion of hydrastis, hamamelis, tussilago, or some similar tonic and mild astringent, containing the opiate, however, if necessary for the relief of pain. The following will be found a superior injection for such cases:

℞ Ext. mangiferæ ind. fl.,
Glycerine, aa, ℥i.
Aq. font., ℥vj.
M. Sig. Inject a fluid ounce three to five times daily.

A continuation of the discharge for three or four days, during which the active symptoms are still farther subsiding, may be effectually met by the use of injections of the bromide or chloride of zinc, twenty to forty grains to the pint, or double the amount of the sulphate of zinc. While applicable to all the forms of vaginitis, a solution of the chloride of gold and sodium, five or ten grains to the pint of distilled or pure soft water, will be found of especial service in obstinate specific inflammations. A sufficient quantity of the solution to bathe the parts, first cleansed with warm water, should be injected three times a day. The injection of hydrastis, sulphate of zinc and morphia, recommended on page 85, may be used with good effect, omitting the morphia if not demanded for the relief of pain.

The diet should be nutritious, but not rich or stimulating, and the bowels, if constipated, may be moved by some of the saline cathartics.

LEUCORRHEA.

The same constitutional condition which accompanies catarrh of other mucous membranes, may result in a catarrhal discharge from the vagina, to which has been assigned a number of names, as leucorrhea, fluor albus, whites, &c., &c. It will be seen, therefore, that the disease is not purely local, a fact not to be overlooked in the consideration of appropriate treatment.

Leucorrhea may be an affection of the vagina only, or of the uterus and vagina, seldom for any length of time being confined alone to the uterus, as the uterine discharge soon sets up an unhealthy condition of the vagina by gravitation downwards through the canal. In point of frequency, no disease to which woman is liable is as common, since at some period of her existence scarcely any woman escapes attacks of this disorder of greater or less severity. When of a transitory character, and unaccompanied by other symptoms than an increased discharge from the vagina, it is insignificant in its effects, and requires no attention, but when the discharge becomes constant and copious, and of a consistency hereafter to be mentioned as attending the graver forms of the disease, it is by no means of an unimportant nature.

The severe forms not only accompany a depraved and devitalized condition of the general system, but by their constant drain tend to keep up the deranged condition and produce a low grade of vitality, while the vagina becoming relaxed loses its tonicity and fails to sufficiently support the uterus, which passes thereupon through its various grades of descent or prolapse, upon trifling provocation. At a

varying interval of from eight to fourteen days succeeding the close of each menstrual period, a discharge of limpid mucus takes place from the genitalia, which may be considered physiological, and possibly coincides with the escape of the ovum through the vagina; it can only be considered pathological when the quantity of the discharge is quite excessive, its duration several days, and its effects upon the system debilitating. I have many times been consulted with reference to this discharge, by women who were very watchful of their health, and make mention of the fact, believing that medical interference in such cases would be mischievous.

The discharge of vaginal leucorrhea consists of an acid mucus, containing in some cases pus and blood cells, and epithelial scales from the vagina; the discharge of uterine leucorrhea varies principally in exhibiting an alkaline reaction. In appearance it presents every gradation, from a tenacious transparent mucus, in mild or recent cases, to a dark greenish curdy fluid of very offensive odor in the severer forms, and which upon exposure to the air upon the clothing, acquires a darker color, owing to the presence of broken down blood cells. In quantity it varies from a dram or two, to pints daily, in such profuse cases soiling the clothing and requiring the constant use of napkins to preserve a semblance of cleanliness. Tenderness and sometimes dull pain over the anterior and inner aspect of the thighs, soreness or pain in the region of one or both ovaries, tenderness upon pressure over the second cervical vertebra, and a peculiar sensation upon the crown of the head, variously described by different patients as a pain, a feeling of heat, the sensation of formication, etc., etc., with pain or weakness of the small of the back, are symptoms which singly or in their entirety are present with nearly every case. The feverishness upon the crown of the head often results in partial or entire baldness of a patch of the size of a silver dollar, or the hair

at that point becomes harsh to the feel and stands up perceptibly to the eye. The general appearance of the countenance betokens ill health, and the eyes become sunken and without luster, and are surrounded by a livid appearance, differing in degree in different individuals, and in the same individual at different times.

Diagnosis. In a general way, no mistake can well be made in diagnosis, but for successful treatment, it is often necessary to know more of the case than the simple fact that the patient has leucorrhea. Thus, if it be uterine or uterine and vaginal, it is evident that local treatment directed solely to the vagina, will seldom prove satisfactory, for should the vaginal difficulty be relieved, the uterine discharge continuing, even though small in quantity, will again infect the vagina. The general characteristics and symptoms, have already been so fully described as to require no repetition. Vaginal examination will reveal to the touch the vagina, bathed more or less profusely with the discharge, the vaginal walls feel loose, relaxed, flabby ; no unusual temperature is observable.

If the uterus be affected, the external os will be found more or less patulous, and the lips tumefied and soft. The speculum will reveal the vaginal walls often more than usually pallid, in some cases to some extent granulated, and if the catarrh be uterine, the os uteri open and gaping, usually somewhat reddened, and from it there will be seen oozing the discharge, which may be semi-transparent and ropy, or nearly opaque and curdy.

Treatment. Means to restore the general health are too often overlooked or neglected. In this respect no specific treatment can be prescribed ; the judgement of the practitioner must be principally invoked. In general terms it may be said, ferruginous tonics are usually indicated. Thus with the carbonate, citrate or phosphate of iron, we may advan-

tageously employ preparations of viburnum, helonias, aletris, hydrastis, columbo, gentian, cinchona, vinum symphyti comp., and in very many cases where the uterus is affected, the gossypium. The muriated tincture of iron in the following combinations, will be found usually palatable and of service :

℞ Tinct. ferri chlor.,
Aq. cinnamomi, aa, ℥j.
Syr. simp., ℥iv.
M. Sig. Dose, a teaspoonful after each meal.

Or if preferred :

℞ Tinct. ferri chlor.
Acid. phosphor. dil., aa, ʒvj.
Aq. cinnamomi, ℥j.
Syr. simp., ad ℥vj.
M. Sig. Dose, a teaspoonful after each meal.

The skin, by systematic bathing, should be kept in a healthy condition, requiring at times saline, acid, stimulating or simple bathing with friction. Locally, injections of the sulphate of zinc, two to five grains to the ounce, the bromide of zinc, one or two grains to the ounce, and in some cases alum, or tannic acid, one or two drams to the pint of water, may be used three or four times a day. Kennedy's extract of pinus Canadensis, or fl. ext. of mangifera indica in solutions, the permanganate of potash a dram to the pint, and infusions of hydrastis or hamamelis an ounce to the pint, are excellent remedies, but present the disadvantage of staining the clothing unless used with great care. For the application of vaginal injections, the female syringe, which considerably distends the vagina, so as to bring the wash in connection with all the rugæ or folds, is superior to a smaller tube, which may discharge its contents perhaps with good effect upon a limited portion of surface, leaving unaffected, and diseased,

large portions to by their secretions inoculate and reinfect the parts reached and benefitted by the application.

If the discharge be uterine, the os being exposed with a speculum, with some strips of soft cloth or lint wipe away all discharge, and with a camel hair pencil, apply either of the following solutions:

Nitrate of silver, forty grains to the ounce of distilled water,
Bromide or chloride of zinc, five grains,
Sulphate of zinc, or permanganate of potash, ten grains,
Chloride of gold and sodium, one or two grains, to the ounce of distilled water.

Either of these solutions may be applied at intervals of four or five days. To make the application, having securely fastened a camel's hair pencil upon a long handle, it is with a rotating motion carried as far within the uterus as the open condition of the os and cervix will permit. In this way the entire uterine cavity may often be brushed over, and failure to apply the wash to every portion of diseased membrane, may bring failure to all the treatment.

If the cervix be insufficiently open to permit the entrance of the camel's hair pencil, and should the uterine catarrh still continue after a due exhibition of the constitutional means recommended, another resource is left us, in the injection of the uterine cavity by means of the uterine syringe. This proceeding it should be remembered is strongly condemned by some gynæcologists, and unquestionably, unless used with due care and caution, it may be followed by distressing if not fatal consequences.

Should the Fallopian tubes be open, a condition by much more likely to obtain with a relaxed and catarrhal condition of the uterus, the injection may be passed directly into the peritoneal cavity, and perhaps fatal peritonitis be developed. Some have thought that the irritation of the injection may

cause a spasmodic contraction of the uterus, and where the cervical canal is not sufficiently open to permit of the escape of a contained fluid in that direction, it must pass out through the tubes. Even an ordinary *vaginal* injection is sometimes followed by similar consequences.

To guard against danger of this description, the syringe should first be filled with clear water of the temperature of the body, and this injected with an amount of force quite equal to that to be used with the medicated injection. If a few drops of this find their way to the peritoneal cavity, the fact will be announced in from one to five minutes by a severe, sharp piercing pain, lasting for an hour or two in some cases, but in no case necessarily involving any serious consequences. Failing, however, to observe any pain from the use of the water injection, it will be safe to use such injections as may be required, and for this purpose the same remedies recommended for use with the brush, diluted to one-fourth the strength, will be found efficient. If there should still be any fear of the result, the piston of the syringe may be withdrawn before removing the tube, thus exhausting the uterine cavity.

Various other plans have been recommended, all of which are, I think, inferior in point of safety to that above proposed. Thus it has been said, that no uterine injection should be used, unless the cervical canal is ascertained to be sufficiently open to admit of its free escape, and it has been recommended, if necessary, to procure such condition by dilation of the cervical canal, a proceeding none too free from hazard, especially in connection with a chronic inflammation. And a yet better plan proposes the use of a double canula, through the return channel of which the injected fluid can escape as fast as forced into the cavity. But in all those cases in which, as above stated, a simple vaginal injection may pass through the uterus, these precautions will

fail, and neither the dilated cervical canal, or the double canula, will prove safe-guards against peritonitis.

ATRESIA VAGINÆ.

Although strictly speaking, atresia would indicate complete closure of the vagina, the term is by common consent applied also to cases in which the narrowing of the vaginal canal is very great, but the closure incomplete. Complete closure of the vagina may be congenital, or the result of disease or injury. Congenital closure of the vagina may occur as a valve or diaphragm thrown across the canal, in which case its most common situation is just internal to the hymen; or the vagina, from an early arrest of development, may present the appearance of a fibrous cord, lying between the urethra and rectum; or in more rare cases it is entirely wanting; this condition being usually if not always accompanied by the absence of the uterus and ovaries. Such persons cannot be said to have sex. An interesting case of this description came under my observation some five or six years ago, being that of a girl of eighteen, who had never menstruated, for which reason principally I was consulted. Examination showed the anus and meatus urinarius separated by a proper interval of space, which was occupied by a reddish cicatrix to appearance. Scarcely a dozen hairs appeared upon the pudenda. Still thinking it possible that the case might be one of adhesion of the labia, a sound was introduced within the bladder, while a finger was carried into the rectum. Neither by this means, nor by conjoined manipulation, could a vestige of vagina, uterus or ovaries be detected. The breasts were completely flat and undeveloped, and it could not be said that the individual had displayed any particular affection towards either sex, nor had any well defined attempts at menstruation been observed.

Where the closure occurs just behind the hymen, the

difficulty may readily be mistaken for obturator hymen, an error which may sometimes be corrected by close observation, disclosing portions of the hymen yet remaining *in situ.*

Acquired closure of the vaginal canal may result in consequence of injuries to the part, the most frequent of which are injuries from prolonged pressure of the child during labor, also from the use of too strong acids or escharotics, from syphilitic disease, from rape, from protracted and debilitating diseases, fevers, and even cholera has been mentioned as a cause, and from adhesive vaginitis, as mentioned on page 97, under that head.

Symptoms. If the closure be congenital and complete, attention will usually be first drawn to the subject by an absence of menstruation; if a small aperture exists, sufficient for menstrual purposes, attempted coition may first lead to a suspicion of something wrong. If the difficulty be acquired, the same general circumstances, absence of menstruation or inability to copulate, will first attract the attention of the patient. In some rare instances, the collection of mucus has in the cases of girls before puberty, attracted attention by its injurious effects. Where the menstrual fluid is retained for a length of time, the vagina above the obstruction becomes thereby enormously distended, filling the entire pelvis; the uterus is at first pushed upwards into the abdominal cavity, and ultimately becomes itself distended; the abdomen increases in size; at each menstrual epoch pains are observed, the efforts of the uterus to unburden itself, which become more and more severe at each monthly recurrence. Ultimately the retained blood may pass back through the Fallopian tubes causing hæmatocele; or the walls of the uterus becoming thin, rupture of that organ and fatal peritonitis may result; or instead, a general dropsical condition with emaciation, debility and death may follow.

Diagnosis. The attempt to make an ordinary vaginal

examination discloses the closure of that organ, and in addition to the symptoms already given, physical diagnosis by means of a sound introduced into the bladder, with a finger in the rectum will reveal much. The location of the obstruction and its extent in some cases, the absence or rudimentary condition of the vagina in others, etc., etc. Where considerable distension from retained menstrual effusion is present, abdominal pressure in conjoined manipulation should be avoided, or only practiced with the greatest care, lest rupture of the uterus or pressure of fluid through the Fallopian tubes result.

Prognosis. Variable and depending entirely upon the cause and condition of the parts. If from injury the amount of sloughing and destruction of tissue have been great, or if from congenital deficiency the amount of vaginal substance is very small, the prognosis can but be doubtful or unfavorable. Where on the other hand the closure is recent, not too extensive, and a considerable amount of vaginal tissue is present, the prognosis may be quite favorable.

Treatment. The means at our disposal may be stated as consisting of means for dilating, tents and bougies, the knife and scissors for cutting, the fingers for tearing and forcibly dilating, exploring needles, trocars and canulæ with ultimately cylindrical plugs of glass, gutta percha, or wood to retain any advantage we may have gained.

In choosing between these means, while not perhaps applicable to all cases, as a rule for a cutting instrument, the scissors are preferable to the knife, as they cause less hemorrhage, and the cut has been thought by some to heal with less cicatrization and contraction of tissue. If the difficulty be acquired, the constriction short, and the closure imperfect, tents of laminaria or sponge will in some cases be demanded, while in other similar cases, the finger or two fingers can forcibly and at once destroy the adhesions. Again it may

be thought best to divide some of the tissue with sponge tents or dilators.

But where the closure is complete, whether congenital or acquired, more skill and judgment are required. If the uterine portion of the vagina be distended with blood, a trocar and canula may afford the most suitable means of commencing treatment, the aperture thus made, being subsequently dilated or enlarged according to circumstances. But even here we may be confronted by the difficulty that the retained menstrual fluid will be too thick and consistent to flow through even a large canula; nevertheless the attempt is proper, as it is universally conceded that danger may follow opening up to the air a uterine and vaginal cavity with too much haste. If the symptoms are urgently demanding the evacuation of the vaginal contents, scissors or the knife must come to our aid, being used with great caution, and remembering the great danger that exists of opening into the rectum or urethra, to guard against which, a sound should be carried into the bladder, held if necessary by an assistant, while a finger in the rectum continually advises the operator of the location of the bowel. By alternately separating and approximating the sound in the urethra, and the finger in the rectum, according to the best judgment of the operator, the passage is opened up, and sufficient vent given for the retained fluid.

Farther opening should be postponed to an intermenstrual period, when the retained fluid having meanwhile all passed off, the opening may by forcible or gradual dilation, or by scissors or knife as seems best, be made large enough to avoid future trouble. During the healing process there will be a tendency to re-closure, which must be avoided by packing the vagina closely with lint saturated with sweet or linseed oil, or smeared with mild zinc ointment, which will require changing at least daily; or a vaginal dilator of glass, Fig. 20, may be worn until the parts are completely

healed. The fact should not be lost sight of, that even after wearing a dilator for years, cases have been observed in which upon removal the parts would persist in again contracting and closing up, but such cases should be regarded as exceptional.

Of course where there is no attempt at menstruation, owing to absence of uterus and ovaries, no menstrual fluid retained and seeking exit; also in acquired closure after the menstrual period of life has passed, no operation should be performed, and it must not be forgotten that by too long delaying operative procedures in cases demanding them, life may be lost, as heretofore stated by rupture of the uterus, or passage of fluid through the Fallopian tubes and resultant peritonitis.

PROLAPSUS OF THE VAGINA.

Any cause contributing to relax the mucous membrane of the vagina, and lengthen the organ, may cause prolapsus of the vagina, or its protrusion in folds from the labia. Too rapid child bearing, prolonged lactation, and especially long continued chronic catarrh of the vagina, may be mentioned as exciting causes. The natural tendency to prolapse, that would be present in old age, from shrinking of the tissues and absorption of adipose matter, is in part antagonized by the natural atrophy of the parts. The destruction of the perineum has been thought to favor this condition, but it by no means necessarily follows, and it may be safely said that so long as the adjacent viscera are normal, and the natural attachments of the vagina are intact, prolapse of the vagina will not occur. In all cases of prolapsus of the vagina it affects only the anterior and posterior walls, of which it may be said the anterior is most liable to a slight protrusion; in cases of loss of the perineum, however, the posterior wall most likely suffers.

Cystocele. Intimately connected with, and in extensive cases necessarily connected with the prolapse of the anterior wall, is a prolapse of the bladder, termed cystocele. It is yet a disputed point in pathology, whether it causes, or is an effect of prolapse of the vagina.

Symptoms. A small pouch, fluctuating to the touch, is found on the anterior face of the vagina, just behind the upper portion of the symphysis pubis. This gradually increases in size, ultimately forming a tumor, which may project from the labia majora. Retained urine, the bladder not being fully evacuated in micturition, becomes alkaline, and decomposes, causing heat, pain and vesical tenesmus.

Diagnosis. The passage of a curved or ordinary male catheter into the tumor is all that is required, with attention to the physical symptoms enumerated, to complete diagnosis.

Rectocele. If the posterior wall of the vagina suffer from prolapse, its intimate connection with the rectum, unless severed by diseased action, tends to cause a bulging forward of the rectum, constituting rectocele.

Symptoms. A tumor appears arising from the posterior wall of the vagina, which may be from the size of a small orange to that of a child's head at full term, distended with hardened feces or gas.

Irritation of the rectum will be present, and prolapse of the uterus will sooner or later probably follow, on account of the continuous dragging down.

Diagnosis. By its usually tympanitic condition, or its distension by feces and presenting a doughy feel, it may be differentiated from tumors; from enterocele by the fact that a finger introduced into the rectum may be brought into close apposition with a finger pressed upon the vaginal side of the swelling, and that the two fingers are felt to be separated only by the thickness of the vagina and rectum, also

from its comparative irreducibility, and from cystocele by observing that the finger carried into the vagina, passes anteriorly instead of posteriorly to the enlargement.

Enterocele, vaginal hernia. With a relaxed condition of the vaginal walls, a portion of intestine carrying before it the cul-de-sac of Douglas (Schrœder,) may pass down to form a protrusion into the vagina, or it may separate the recto-vaginal attachments and protrude from the vagina as a tumor of the size of a child's head at parturition. An interesting case of this rare affection recently came under my observation, in an applicant for clinical treatment, at the Bennett Medical College free dispensary, the protrusion in this case being of the size of a large orange and easily reducible.

Diagnosis. From rectocele, as described above, by its greater reducibility in the horizontal position; by impulse upon coughing; and by the fact that two fingers placed, one in the rectum and one in the vagina, or upon the anterior face of the swelling, can not be approximated; from cystocele, by observing that the finger introduced into the vagina is anterior, instead of posterior, to the enlargement.

Ovariocele. Where the hernial protrusion contains one of the ovaries, the name of *ovariocele vaginalis* has been applied to it. The presence of an ovary may be recognized by the presence in the hernial mass of a body of the size and form of an ovary, usually somewhat sensitive to pressure.

Prognosis. Vaginal prolapse is in itself not necessarily fatal; the various forms of hernia attending it do not tend to become strangulated; nevertheless the constant inconvenience and annoyance to which the patient is subjected incline to break down health and indirectly shorten longevity.

Treatment. As a whole the treatment is unsatisfactory.

Cases of simple prolapse of the vagina, not extensive or particularly implicating the adjacent viscera, may be treated successfully by the judicious application topically of tonics and astringents. A complete enumeration of the various remedies applicable is unnecessary, as they will readily suggest themselves to the practitioner. Tannin with glycerine; the vegetable astringents rich in tannin, as catechu and matico; the tonics and astringents as hydrastis, hamamelis, mangifera indica, berberis, and possibly the styptic salts of iron may be found useful in some cases.

Some support seems at times necessary, and I have found it a good plan in the commencement of treatment, to saturate pledgets of cotton with some astringent, and introduce them into the vagina, changing every night and morning. At first they should be so large as to distend the vagina and thus serve as a support, but after the vagina acquires sufficient tone to no longer require support, its distension should be avoided, if even the cotton pledgets be not entirely discontinued.

Elytrorraphy, from *elutron*, "the vagina," and *raphe*, "a suture," is an operation for narrowing the vaginal canal, and in some of its forms may prove useful in prolapse of the organ and its accompanying herniæ, especially cystocele.

Stripped of operative detail, this operation consists in

a Removing a portion of the entire vaginal wall, or

b Removing simply the mucous membrane,

after which the cut or freshened surfaces or edges are brought together and retained by silver wire sutures.

CANCER OF THE VAGINA.

Cancer of the vagina rarely occurs as the original disease, but usually appears as a sequence to cancer of the uterus, by extension of cancerous tissue from that organ, this complication occurring about once in every five cases. In some

few cases, however, the vagina will be found primarily or solely affected.

Symptoms. Pain more or less acute and lancinating, with soreness, and in advanced cases the discharge of an ichorus or sanious watery fluid. In the earlier stages the symptoms may vary somewhat, but the vagina will usually be found hard and unyielding, its walls seemingly thickened, and the site of hard knobby excrescences, which are not in themselves, however, positive evidence of malignant disease. Further along in the progress of the malady, deep, eroding ulcers are present, accompanied by the discharge before mentioned, which discharge should in all doubtful cases be examined by some competent microscopist for cancer cells. Perforation of the adjacent walls of the urethra and rectum, and in some cases even the peritoneal cavity, usually precedes the lingering fatal termination.

Prognosis. Unfavorable in all cases.

Treatment. While in the present state of medical knowledge there is no treatment of cancer of the vagina which is attended with success, cases bearing a resemblance to malignant disease may nevertheless be really benign, and yield to a rational treatment; hence, before deciding a case to be incurable, a satisfactory diagnosis must be formed. In the treatment of cancer, our principal aim must be to keep the patient as comfortable as possible, and since from the nature of the part affected it is impossible to remove the diseased structure, no attempts should be made as they can only cause the patient pain and suffering. With the view of promoting comfort, soothing and sedative applications only should be made. The application of chloroform vapor and carbonic acid gas, as recommended elsewhere under the treatment for cancer of the uterus, will prove often of great comfort to the patient. The remarks there to be found relative to disinfection and the general palliative treatment, are

equally applicable here. I have not as yet in such cases used a solution of salicylic acid, but should presume it would act well as a disinfectant. Pyroligneous acid with water in the proportion of one to eight or sixteen, weak solutions of chloride of zinc or permanganate of potash, and many other similar washes and solutions, may be used for vaginal injections, once or several times daily according to circumstances. An infusion of opium or solution of morphia may be used as an injection for the relief of pain, and at times with the best effect, *per rectum*. Suppositories containing these and other narcotics, introduced into the rectum, from the slowness with which they are absorbed, are good means for maintaining a continuous effect. Mixed with sufficient butter of cacao, the following formulæ will be found useful:

a Opium, grs. ⅛ to ¼.
b Aq. ext. opii, grs. ¼ to grs. ij.
c Opium, grs. ss to grs. j.
d Ext. belladonnæ, grs. ss.
e Ext. hyoscyami, grs. ij.
f Aq. ext. opii, grs. j.
g Ext. belladonnæ, grs. j.
h Morph. sulphat., grs. ¼ to grs. ss.

Of these and similar narcotic combinations one to three or even more may be used daily, according to the effect produced.

Hemorrhage. Our resources for the control of hemorrhage are abundant and quite satisfactory, and will consist of the injection of styptic solutions, the persulphate or perchloride of iron, tannic acid, alum, etc., etc., or if need be, the introduction into the vagina of pieces of cotton batting or charpie, saturated with any of these preparations. A saturated solution of the perchloride of iron in glycerine, is recommended as superior to the solution of the same remedy with water.

CHAPTER IX.

GENITAL FISTULÆ.

Fistulæ of a great variety, affecting the genito-urinary organs of the female, have for a long time engaged the attention of the medical profession, but it is not until a comparatively recent period, that the means adopted for their treatment has been at all successful.

To no person, probably, is more credit due for the present advanced ground occupied by these operations, than to Prof. Sims, since although the plan of freshening the edges in various ways, and their approximation by sutures, as also their cauterization by galvanic and chemical cautery, with a view to profit by subsequent cicatrization, had been tried in the hands of the most skillful and eminent operators, there was still wanting to the profession some effectual means for exposing and controlling the parts, in order to give to the operation that perfection of detail necessary to success.

That want was supplied by the introduction of the duck-bill speculum by Prof. Sims, and to an extent that will perhaps never be exceeded. Although various modifications have been already and doubtless will hereafter be proposed, practically nothing as yet has appeared to excel if even equal the original device. And even should the present form be superseded, the name of the inventor and demonstrator of the principle must nevertheless go down to posterity as that of a great benefactor to his race, in this that he removed operations of this class from the domain of un-

certainty and difficulty, to that of comparative certainty and ease.

The introduction of metallic sutures has no doubt been a great step in advance and contributed no little to the successful performance of operations of this character.

Fistulæ when establishing communication between the urethra and vagina, are termed *urethro-vaginal.*

Between the bladder and uterus, *utero-vesical.*

Between the bladder and vagina, *vesico-vaginal.*

In some rare cases a fistulous tract has been established from the bladder into the substance of the anterior lip, and terminating, without perforating the uterine cavity in the vagina, constituting *vesico-utero-vaginal* fistula, and finally a connection of one of the ureters with the uterine cavity has been observed, but very rarely.

Fistulæ are also occasionally established between the vagina and rectum, *recto-vaginal,* and in some still more rare cases, between some coil of the small intestines, constituting really an artificial anus.

As the general causes of fistulæ are the same, and as the treatment, if any be practicable, of the rarer forms, is more completely a subject for the ingenuity and judgment of the operator, I do not consider it profitable here to enter upon a description of those seldom seen, and which perhaps may in no two instances present precisely the same form.

Causes. Ever prominent among the causes will be found the circumstances attendant upon parturition. A long continued pressure of the head upon the soft parts of the pelvis during the second stage of labor, often results in a most damaging and irreparable destruction of tissue, a destruction which in extent varies from a simple perforation of the urethro- or vesico-vaginal wall, to the destruction of nearly all the soft structures lying behind the symphysis pubis, including the entire urethra and a portion of the base of the blad-

der, as was the case in a patient I recently saw. Another woman that ten years ago came under my observation, suffered from vesical fistulæ in three labors, the difficulty after each occurrence being cured by appropriate treatment.

The pressure of instruments in instrumental labors has caused fistula no doubt many times, yet it should always be taken into consideration, that instruments are most frequently used in consequence of impaction or delay of the head in the pelvis, of itself a fruitful and sufficient cause of mischief.

And as it exactly coincides with my own experience so far as it has extended, I quote from Thomas' diseases of women, p. 173 :

"In a report upon this subject by I. Baker Brown to the Obstetrical Society of London, in 1863, the following statements are made : 'With regard to the causes of vesico-vaginal fistula, of the fifty-eight cases admitted into the London Surgical Home, forty-seven were over twenty-four hours in labor, and thirty-nine were as much as thirty-six hours or more ; seven were two days ; sixteen were three days ; three were four days ; two were five days ; two six days ; and one seven days.

"'In the whole number of cases instruments were used in twenty-nine, exactly one-half, and in four only of these was the labor less than twenty-four hours, and with seven exceptions the patient had been thirty-six hours or more in labor before the instruments were used.

"'Of the fifty-eight cases, in twenty-four only the injury happened at the first labor ; in seven at the second ; in five at the third ; in four at the fourth ; in five at the third ; in four at the fourth ; in six at the fifth ; in two at the sixth ; in five at the eighth ; in one at the ninth ; one at the thirteenth ; one at the fifteenth ; and two not mentioned.

"'From the foregoing statistics it is evident that the cause of the lesion is protracted labor, and not the use of instruments or deformity of the pelvis.

"'As a necessary deduction from what has been stated, it follows that vesico-vaginal fistula would scarcely, if ever, occur, if a labor were not allowed to become protracted; and this is a point for the careful consideration of practitioners in midwifery.' The experience of Dr. Sims, Emmet, and Bozeman is confirmatory of that of Mr. Brown, and as the opportunities for observation enjoyed by these four practitioners have probably been as extensive as those of any living authorities, their evidence may be regarded as conclusive."

These facts should be borne in mind by the practitioner, since there is with some a disposition to cast discredit upon the use of instruments, and in this way an incompetent person having charge of a labor at the first, may be disposed to cast blame for the appearance of a fistula upon a skillful operator, who, coming in after long continued pressure, has destroyed the vitality of some portion of the genital canal, nevertheless by the only possible means saves the life of the patient.

Pessaries, worn too continuously without change, or improperly fitting, have frequently perforated either the anterior or posterior wall of the vagina; also injury to the urethra in operations for the removal of calculi from the bladder has resulted in fistula.

Direct violence has also been responsible for fistula, and rarely perforating abscesses have occurred. This cause, it must be evident, is a rare one, since an abscess arising in the recto-vaginal or urethral septum must be so exactly balanced as to discharge both ways to produce a fistula. The destructive action of cancer affecting these structures often terminates in fistula.

Symptoms. Urinary fistulæ manifest themselves by the involuntary escape of urine, by its excoriating action upon the parts with which it comes in contact, and the resulting

pruritus and smarting, and by the redness and evidently inflamed appearance of the parts when subjected to inspection. The involuntary escape of urine from fistulæ, caused by the destructive pressure upon the parts during protracted labor, does not usually appear at once, but after a delay of three or four days, since this time is required for the separation of the slough caused by the pressure.

In instances where, by the pressure of instruments used during labor, or for the removal of calculi, or where by spiculæ of bone in craniotomy a fistulous cut has been produced, the involuntary discharge will at once take place. At times the urine will not flow for a time while the patient is in a recumbent position; at others it may be temporarily checked upon resumption of the erect position, these circumstances depending entirely upon the location of the fistula, and the effects produced by the gravitation of the urine.

If the fistula be urethro-vaginal, the urine may be retained as usual, but upon attempting to void it, it will be mostly or entirely discharged *per vaginam*, the opening being so large as to afford escape for all the urine secreted, or so small as to provide for only a part, rendering occasional voluntary expulsion by the patient necessary.

Fecal fistulæ admit of the involuntary escape of the gases of the bowels, and where large enough of the more solid contents as well, thus constituting an extremely annoying and disgusting condition, both to the patient and those surrounding her.

Diagnosis. Ordinarily the diagnosis of fistulæ is not a difficult matter. Bearing in mind the physical symptoms already mentioned, a sound or catheter introduced within the urethra may be felt through the fistula, if of sufficient size, by a finger introduced in the vagina. Or the Sims' speculum being introduced, and the anterior wall of the vagina exposed, the opening will usually be at once detected.

If, however very small, some difficulty may be experienced, requiring close inspection to discover the point from which the urine slowly oozes, the trouble being increased, of course, if the fistula be urethral, below the sphincter vesicæ, and the flow of urine consequently dependent upon the voluntary micturition of the patient.

In cases of this kind, the parts being exposed to view, the urethra should be injected with some innocuous colored fluid as milk, or water colored by the addition of indigo, alkanet or carmine, when the colored fluid may be observed starting from the fistula, and its location fixed. A similar course serves for the diagnosis of vesico-uterine and uretero-uterine fistulæ; in the latter form it being observed that the urine escaping from the os uteri is not discolored by the introduction of colored fluids into the bladder.

Treatment. Although the literature of the subject shows that more than three hundred years ago, the minds of medcal men were directed to the problem of treatment, it is only within the past thirty or forty years that correct ideas seem to have prevailed.

Cautery. The first idea which seems to have been entertained in the treatment of fistulæ, was their vivication by caustics or cautery, relying upon subsequent cicatrization for their obliteration. For this purpose the various caustics and mineral acids, the galvanic and potential cautery have all been used. Where the opening is very small from the first, or where a very small failure in union in the operations hereafter to be described exists, the process of cauterization is proper, and often successful. In large fistulæ it completely fails, and it is folly and a waste of time to resort to it. In such cases a more extended and important operation becomes necessary, which I now proceed to consider.

The necessary features of this operation are thus enumerated by Thomas; and consist of

"1st. A means for exposing the fistula to view and manipulation.

"2d. A suture which would remain in place without causing inflammation.

"3d. A means of disposing of the urine during the process of cure."

With regard to the first proposition, there seems to be no essential disagreement among authors; as regards the second proposition, American writers give almost universal preference to metallic sutures; but Schrœder, p. 525, declares, "The silver wire suture possesses no advantage whatever over good, smooth silk thread." When, however, we learn that Sims, after operating for twenty-nine times upon the same individual, using each time silk or hemp sutures with failure, but at the thirtieth trial with metallic sutures was successful, we not only learn a grand lesson in perseverance, but find it difficult to suppose that he would be thereafter an advocate of anything but the metallic suture.

Simpson preferred annealed iron wire No. 32, for its greater strength and cheapness, and did not consider its greater proneness to oxidation, as compared with silver or gilt wire any disadvantage. Some have used platinum, others lead wire, which from its lack of strength would seem least desirable of all.

It is the experience of every surgeon that silk or hemp sutures soon fester or suppurate, and either remove themselves or require removal, in a few days. Being pervious, they absorb the fluids of the adjacent structures, and to the warmth of the parts readily contribute a sufficient supply of oxygen or air containing germs, to set up a putrefaction, which tends to spread and destroy the surrounding tissues.

Upon the other hand silver or other metallic wires, if

not drawn so tightly as to interfere with the circulation of the parts, remain passively holding the parts together without suppuration for days or even weeks if need be. The presence of leaden bullets, carried without inconvenience for years in the muscular tissues of hundreds of persons, is only an illustration of the toleration of the system to the presence of metallic masses.

As regards the third requirement, "A means of disposing of the urine," it is proper to say that while nearly all operators of every nationality recommend the introduction and retention of a catheter during the process of cure, the recommendation is not universal, some asserting that it is an unimportant matter. In deciding upon these points, it should be recollected that those operators, whose efforts and ingenuity have made for the operation a name and success; the men who of all others have had most extensive and successful experience, appear to be as would be expected, those who have followed the most definite and systematic course in operating. Although the treatment is simple in principle, many cases present great difficulty in detail, and in every surgical procedure, the operator who pays greatest attention to each minute detail, will in the long run prove most successful.

The system should be prepared to some extent, by securing as good a general degree of health as is possible. Excessive cicatrization and contraction of the parts may require removal by appropriate treatment; the cicatrization, by removal of cicatrized tissue, and the contractions by division, for which purpose scissors are preferable to the knife, as their use is attended with less hemorrhage, less danger of pyæmia, and the cuts made heal more slowly and with less disposition to contract. If excessive contraction of vaginal substance have taken place, dilators of glass or other suitable material may be necessarily worn for two or three weeks previous to final operation, and so far as possible under ex-

isting circumstances, the tone and health of the parts should be promoted.

For this purpose syringing twice daily with infusions of hydrastis, hamamelis or other similar tonic and slightly astringent remedies will be beneficial.

The operation consists in freshening the edges of the opening, and bringing them by sutures into apposition. The patient is placed in the position for Sims' speculum, and its control assigned to an assistant, who may with his disengaged hand assist in separating the nates, so as to bring the vagina into full view. As the operation may prove quite lengthy and tedious, steadily sustaining the speculum may be quite tiresome, so that it will be well if practicable, to have the nates separated by a separate assistant. Simon made use of thin and elastic metallic hooks to laterally separate the vaginal walls. For freshening the edges some operators prefer knives of varying shape and angle, to apply to all parts of the circumference, or a knife which has been devised, the blade of which moves by a ball and socket joint; others, scissors bent to the right and left. Sims' rotating knife, Fig. 21, will be found convenient if the knife is to be

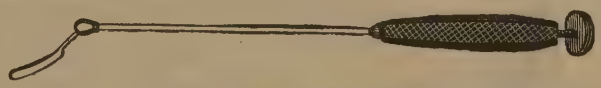


Fig. 21. Sims' rotating knife.

used. Of scissors several forms are furnished by the instrument makers, among which may be mentioned Bozeman's

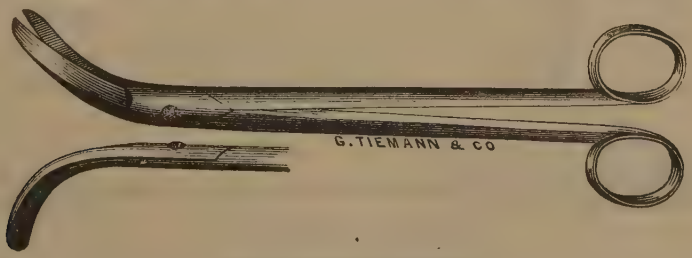


Fig. 22. Bozeman's scissors.

scissors, Fig. 22, which are rights and lefts, and are also fur-

nished with angular handles. Heywood Smith's scissors, Fig. 23, are so jointed as to be adaptable to any angle, and thus in the one instrument to combine the effectiveness of two or more. If from the position of the parts one side of the fistula is lower than another, the operation may be commenced on the lower side, as the blood which will be present during the progress of the operation will thus interfere less with the sight.

Fig. 23. Heywood Smith's scissors.

Small pieces of sponge held in the sponge holder, Fig. 24, or in some convenient form of forceps, will be necessary to absorb the blood. With toothed forceps or tenaculum a portion of the cicatrized edge is caught up, and transfixed with the knife, the cut or incision beginning about an eighth of an inch from the edge of the mucous membrane of the vagina, and terminating just at the lining membrane of the bladder or urethra. This cut being continued around the fistula, removes or freshens the edge in a beveled manner, making a conical cavity whose base is the vagina, with the apex pointing to the bladder. By this means a freshly cut surface is procured, considerably greater than would be obtained were the

Fig. 24. Sponge holder.

incision carried perpendicularly to the surface of the vagina.

In this part of the operation two points are especially to be observed, a neglect of which will probably prove fatal to the success of the operation:

1st. To remove every particle of the mucous membrane, the most insignificant islet of which being left upon the surface to be approximated, being sufficient to produce a failure of perfect union.

2nd. To avoid wounding the mucous membrane of the bladder, by doing which hemorrhage into the bladder may succeed the operation; but it is proper to say, that Prof. Simon ignores this precaution, otherwise almost universally observed.

Those, however, who have experienced the difficulty attendant upon removing clotted blood from the bladder, need not be reminded that this will be a serious complication, one likely to bring failure upon otherwise the most happily conducted operation.

Any little arteries that persist in spouting should be twisted, and the flow of blood staunched, not by the application of styptics, but by that of sponges wetted in moderately cool or quite hot water.

The Sutures. The proper application of the sutures is by no means least among the requirements for success.

Fig, 25. Sims' needle forceps.

If possible the operation should be so planned and executed, that the line of closure will lie transversely to the

vagina. The sutures should be close together; in large fistulæ it being better to have one too many than as many too few.

Some operators have recommended the passage of silk sutures, with a short curved needle, carried by needle forceps, Fig. 25, to which silk threads metallic sutures may afterward be attached and drawn through. To obviate this difficulty, a short curved needle has been devised, whose base was drilled longitudinally, a female screw being cut in the hole thus made. Although somewhat ingenious, it can not be considered convenient, and does not compare well in practical utility with the hollow needle in its various modifications. The stitches should enter the vaginal mucous membrane, at a distance of three or four lines from the edge of the cut, and pass out close down to but not perforating the vesical membrane. If, as the needle is first passed, it should dip too deeply, or not deep enough, let it be withdrawn and passed *right*. Passing across the fistulous opening it enters just at the vesical edge, to emerge again as it entered, at a distance of three or four lines from the freshened surface.

In extensive openings, exposing the surface of the bladder, great care must be taken not to wound the orifices of the ureters, an accident which has more than once happen-

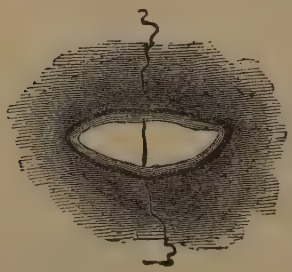
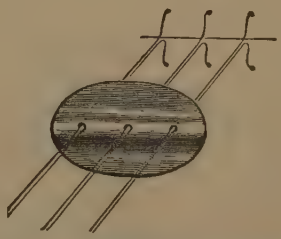


Fig. 26. The suture passed.



Fig, 27. Application of the plate.

ed. Usually all the sutures necessary will be passed before tightening any of them, but occasionally a case may occur,

in which it will be preferable to tighten one or two before passing the remainder.

Nearly every operator has at one or another period of his experience, entertained some peculiar views as to the best manner of treating the sutures. Thus Dr. Bozeman passed the ends of his wire sutures through perforations in a lead button, as represented in Figs. 26, 27 and 28, the object being to secure steadiness, and freedom from muscular contraction of the parts during healing. The ends of the wires

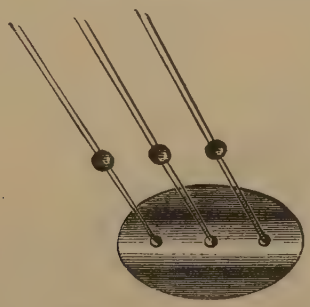


Fig. 28. Application of the perforated shot.

were fastened by clamping upon them perforated shot as shown in Fig. 28.

Prof. Simpson, failing in the use of that apparatus, devised a wire splint, "by twisting with the fingers ten to fifteen strands of the iron thread into a cord, the ends of which are then doubled over each other and plaited around into the form of a circle. This is very light and flexible, and may be compressed into an ovoid or other shape, according to the necessities of the case." With a pointed awl-shaped instrument, holes were insinuated between these wires, through which the wires of the sutures were passed and secured by tying or twisting. In his later operations he simply tied or twisted the ends of the wires, and leaving the ends of all of them long, knotted them all in one mass and left them projecting from the vagina. Others have used a lead plate perforated with a double row of holes, through which the wires were passed, to be twisted upon the top, or

held in place by perforated shot clamped in place by suitable forceps. A small chest full of different instruments has been devised to carry out the various ideas, but at the present time the simpler and more direct plan of twisting or tying the wires is usually preferred to more complicated proceedings.

The wires after twisting should be cut off with scissors at a sufficient length to guard against untwisting, and the projecting ends smoothed down to the vagina, to prevent irritating or wounding its walls. Fig. 29 represents the twisting

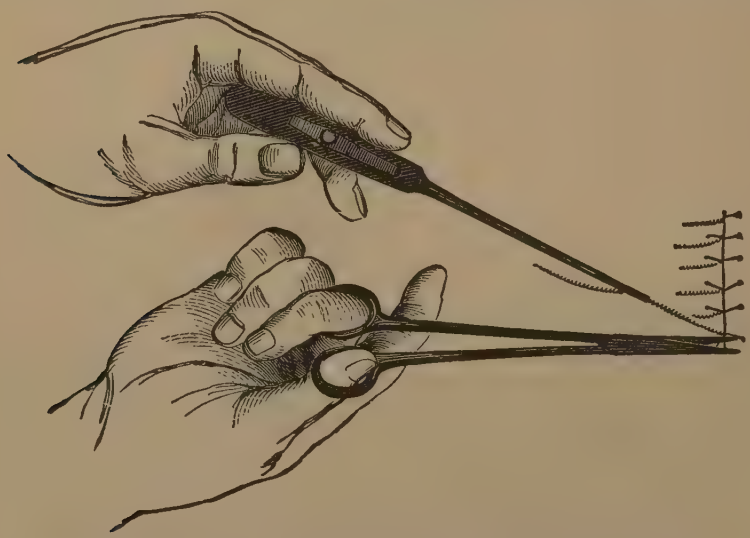


Fig. 29. Forceps for twisting and scissors for cutting wire sutures.

forceps and scissors as used. Any clots of blood by chance remaining in the bladder, may be removed by syringing if necessary, and a short sigmoid catheter, Fig. 30, being intro-

Fig. 30. Sims' Sigmoid catheter.

duced, the patient is laid in bed.

After treatment. Within an hour or two the catheter should be examined to see that it remains open, and that the

urine is gradually passing through it into whatever receptacle is placed for that purpose. If it become clogged, the passage of a flexible probe may open it, failing in which it must be removed, cleansed and re-introduced. And twice daily it should, during convalescence, be removed, carefully cleansed and replaced. The bowels for three or four days should be restrained from action by the use of opium, of which sufficient should all through be administered to procure quiet and freedom from pain.

I am well aware that there are practitioners who are opposed to the use of opium and its preparations. This is no place for an argument, and I simply state that the experience of nearly twenty years has convinced me that we have no more valuable remedy in the materia medica.

Once a day the vagina should be carefully syringed out with an infusion of baptisia, hamamelis or hydrastis, or a mixture of pyroligneous acid and water in proportion of one to ten, which may be preceded, if it seem desirable, by injections of castile soap and water. The sutures may remain from eight to sixteen days, according to appearances, and should be carefully removed, avoiding in the act putting the newly formed cicatrix upon the stretch. The catheter may be removed in a day or two longer, and the patient encouraged to retain the urine for an hour or two at first. After a few days the bladder resumes its natural tone and size.

Utero-vesical fistula. Treatment. By the introduction of sponge tents the cervical canal may be so dilated as to enable the operator to ascertain the location of the opening. Where this is found not too high up, it has been proposed by Jobert de Lamballe to slit up the anterior lip of the uterus to the fistula, freshen the edges and unite by sutures. The same general directions as to after treatment of course are applicable here as in other forms of fistula. If this operation be found impracticable, recourse may be had to

freshening the lips of the uterus and their approximation by sutures, thus artificially closing the uterus, from which menstruation is henceforth conducted by the fistulous opening through the bladder and urethra. Although sterility would seem to be the inevitable result, a case is alluded to by Hewitt, Diseases of Women, p. 711, in which, notwithstanding this operation, the woman became pregnant, probably from incomplete closure of the os.

Fistulæ with great loss of base of the bladder. Fistulæ of this description occur, where from the extensive loss of tissue the ordinary operative procedures are impracticable.

Treatment. Four methods of operation are here open for our choice.

1st. Elytroplasty,
2nd. Kolpokleisis,
3rd. Episiorraphy,
4th. Bozeman's operation.

Elytroplasty, from *elutron*, "the vagina," and *plasso*, "I form," consists in the dissection of a flap from the buttock, vagina, or wherever most convenient, and its application to the part deficient in tissue. It is therefore a Taliacotian operation, the manner of performing which rests with the ingenuity of the operator, and to which are opposed evident obstacles so formidable that it is here mentioned, not to recommend it, but as a matter of information. Its author was Jobert.

Kolpokleisis, probably from *kolpos*, "a hollow," hence the vagina, and *kleio* "I close," is the name given by Prof. Gustav Simon of Heidelberg, to an operation which he was the first to perform, and which has for its object closing the vagina.

The point selected is usually as high up as the loss of tissue will permit, and strips of mucous membrane being dissected off the anterior and posterior walls of the vagina,

the freshened strips are brought together with sutures. Sterility is of course produced, and even copulation interfered with very materially.

Episiorraphy, from *episeion*, "the vulva," and *raphe*, "a suture," consists in freshening the inner surfaces of the labia majora, and securing coaptation by sutures.

The result of these operations is better than could be anticipated, the perversion of the vagina to a receptacle for urine, mucus and menstrual discharge, being much better borne than would seem possible.

Dr. Bozeman's operation consists in producing an artificial descent of the uterus until its cervix and anterior lip can be attached to the lower and remaining anterior wall of the vagina. A daily traction for some days or weeks upon the uterus, by seizing it with forceps, is the procedure, the attachment being formed according to the usual principles governing such operations.

Vesico-utero-vaginal fistulæ. Where the destruction of tissue is not too great, a cure has been occasionally effected, by freshening the edges of the fistula and bringing them together with sutures. If the loss of structure in the anterior lip be too excessive, the posterior lip may be freshened and attached to the anterior wall of the vagina. Sterility results, but copulation is still practicable.

In all such operations affecting the future generative status of a woman, age of course is to be considered. If the patient be an old woman, and beyond the child-bearing age, less hesitation would be felt naturally in adopting an operation of itself a deformity.

Recto-vaginal fistulæ. Treatment. Less difficulty usually attends the treatment of this form of fistula than either of the preceding varieties. In its treatment the same general principles are to be observed. The patient, laid upon the back, occupies what is known as the lithotomy position, the

thighs being well flexed upon the abdomen; exposure of the fistula is accomplished by the use of two flat steel hooks, introduced within the vagina, and separating its walls laterally. Upon thus being exposed, the edges are pared, and sutures introduced and disposed of as in ordinary vesico-vaginal fistulæ. The bowels, having been evacuated previous to the operation, should be restrained from action for from five to eight days by the administration of opium, the diet meanwhile being concentrated fluids, of which beef tea may be taken as the type, thus affording little solid excrement. Whenever movement of the bowels becomes necessary, injections of warm water, if necessary reinforced by the addition of a little castile soap, should be used to secure as great a degree of fluidity as possible.

Recto-labial, and vagino-labial fistulæ may be treated:

1st. By the injection of a solution of sesqui-carb. potassa, tincture of iodine, or other irritant and caustic remedies.

2nd. By passing a ligature through the fistula and tightening it every day or two until it cuts through the septum.

3rd. By at once, with the knife, incising it.

As nothing in their treatment differs materially from the ordinary treatment of fistula in ano, the reader is referred to works on general surgery for further information, and as in the treatment of the other forms of fistula, which occasionally but rarely are met with, there is no difference in principle from those already considered at length, no further reference to the subject is necessary.

I have made no mention of fistulæ occurring in consequence of cancerous perforations, as they are without known remedy. If by any means the activity of the cancerous action could be stayed, in other words the cancer be cured, the remaining fistulæ would of course present no anomaly in treatment.

CHAPTER X.

ABNORMALITIES OF THE UTERUS.

The uterus is subject to various abnormalities. Thus it may very rarely be completely wanting, or exist only in the most rudimentary condition. Complete lack of the uterus, or even rudimentary uterus, it is impossible to *positively* diagnose during life, but notwithstanding its usual association with an imperforate vagina, if indeed that organ be not entirely wanting, a rudimentary uterus may be made out usually in a satisfactory manner by conjoined manipulation. A more perfect form is where considerable uterine substance exists, but without cavity.

The uterus bicornus or *bipartus*, presents every degree of deviation, from an organ presenting a cornus with a slight bulging or enlargement projecting from each side of a cervix, to an organ divided by a septum, which still further developed may divide the vagina, thus producing double vagina.

Atresia of the uterus. Complete closure of the cervical canal may be either congenital or acquired.

Causes. The most common causes perhaps of acquired atresia, arc the use of caustics applied to the os and cervix in medical treatment, and injuries, as from instruments, severe labors, and the like. Diseased conditions may also produce a sufficient adhesive inflammation to cause closure, in an inter-menstrual period, or as has been known during gestation, and as atresia of the vagina has been known to follow some attacks of fevers and prostrating sickness, so may the same causes be succeeded by atresia of the cervix uteri.

Symptoms. Congenital atresia is not likely to be discov-

ered until after the age of puberty. At this time, although the menstrual molimen is present, menstruation is absent—rather it is retained. There results an intra-pelvic tumor, which vaginal and rectal examination, with judicious conjoined manipulation discovers to be the uterus enlarged. Vaginal examination reveals neither by the finger, nor the speculum, an os uteri, although in some cases a slight depression, pit or other evidence may point to the natural location. In acquired atresia following a tedious instrumental labor, the attention is perhaps first attracted by the absence of menstruation, although the usual symptoms accompanying it are present.

Diagnosis. Conjoined and rectal examination discover the enlargements. If the closure be at the external os, the uterus will be quite globular in form, hard and unyielding to a degree not observed in anything else except malignant tumor, which in many cases will present a characteristic knobby or nodulated feel. A pregnant uterus would be softer and more yielding. The Fallopian tubes may be distended with blood perhaps and be felt posterior to the uterine tumor. In women past the menstrual period more difficulty may arise in forming a correct diagnosis, and hydrometra may exist in such cases, from which it would be difficult to differentiate by external signs. But even in women of advanced age the contents of such an enlarged uterus may be sanguineous, as shown by a case cited by Schrœder, p. 55, in which Pistor "found sanguineous contents in the tumor in a woman sixty-eight years of age, at whose autopsy uterine fibroids were discovered," an evidence it is thought, "that a hæmatometra in old women may occasionally be accounted for by the presence of neoplasms, which induce hemorrhage into the cavity of the uterus."

If suspicion exist of the nature of the difficulty, it should be borne in mind that by too firm pressure, the uterine con-

tents may be forced out through the Fallopian tubes, hence caution should be exercised in this respect. If upon consideration of the symptoms presented, any doubt remain as to the nature of the difficulty, an exploring or aspirator needle should be carried into the uterus, at its most depending portion, or as near as possible to the probable location of the os.

Treatment. In acquired closure it is frequently the case that the location of the os uteri may be determined, and if so the adhesions will give way often to the steady pressure of a uterine sound, a small catheter or other similar instrument. Failing in this a curved trocar should be introduced into the tumor, and experience has shown that its introduction should be at a point as far back as possible, since in such cases the anterior lip of the uterus is usually the presenting part. The contents being evacuated, the opening thus made should be enlarged by subsequent incision with a bistoury, or dilation with tents, and its further adhesion guarded against by the frequent introduction of sounds, dilators, or in some cases the object may be accomplished by breaking down the adhesions with the finger. Unless putrefaction of some portion of the retained contents should ensue, no injection of the cavity should be made; but if in this way antiseptic injections should be made necessary, great care in their use should be taken.

HYDROMETRA.

Hydrometra is a rare affection, and consists in the distension of the uterus with water or serum.

Symptoms. A slow and gradual enlargement of the uterus, occurring mostly in women past the menopause, which distension becomes very great sometimes, but which is unaccompanied by any other very marked or prominent symptoms, except that occasionally the uterus contracts at

times upon its contents, causing pains similar to labor pains. The water is usually the secretion of some diseased portion of uterine surface, and may result from cancerous affections. In this way more than four gallons of fluid have been known to accumulate at one time.

During pregnancy a dropsical condition of the amnion is sometimes present, giving rise to what has been termed *hydrorrhea* or "false waters," in which case a quantity of water, in amount from a few ounces to pints, may escape one or several times during gestation. The course of the pregnancy, or its result, is usually not influenced by this difficulty.

Treatment. The fluid contents of the uterus should be drawn off, which can usually be done by insinuating, with some force, a catheter into the os. If this be impossible, a trocar and canula may be made use of. If the difficulty recur, as at times it does, a repetition of the treatment must be resorted to, and if thought advisable owing to frequent recurrence, an attempt may be made by dilating the os to discover the cause and if possible relieve it.

PHYSOMETRA.

An accumulation of gas in the uterine cavity has occasionally been met with. The expulsion of flatus from the vagina with a slight explosive action sometimes occurs, and has in some cases led to the belief that the gas was generated in the uterus, while in truth it had, by some movement of the body, or these parts, but recently been drawn into the vagina. In a case of this kind coming under my notice, the patient had suffered from a slight laceration of the perineum, which while so insignificant as to cause no other discomfort, allowed in some positions of the body a slight gaping of the vulva, and an insufflation of air into the vagina, to be ejected perhaps soon after.

Causes. A putrefying fetus, or portions of the secundines, or clots remaining after the expulsion of an impregnated ovum, or after an ordinary delivery, appear to be among the most frequent causes of physometra. Evidently air must first gain admission, and the cervix uteri become subsequently closed or plugged in order to produce this phenomenon. That air does occasionally enter the cavity of the uterus immediately after delivery is generally believed. In this way the germs of putrefaction may be carried to any suitable material occupying the cavity, and the evolution of gases be commenced.

Diagnosis. Examination reveals an enlarged uterus, tympanitic, softer and more compressible than would be the case were its contents fluid. Any doubts may be speedily solved by the introduction of an exploring needle, or the needle of a common hypodermic syringe.

Treatment. The introduction of a catheter, or if this be impossible, a trocar and canula, for the evacuation of the gas, will be appropriate treatment. If its cause be some decomposing material, the uterine cavity should be syringed out with a solution of sulphite of soda, salicylic acid or infusion of baptisia.

TUBERCULOSIS OF THE UTERUS.

It is doubtful if tuberculosis of the uterus ever appears as a primary disease, but it is associated in some rare cases with tuberculous deposits in other parts of the system. The part affected is usually the mucous surface, and when occurring soon after delivery, the placental site is most frequently the part affected. Ultimately tubercles may cause a considerable enlargement, and usually there will be degeneration of the mucous membrane, ulceration and the formation of a caseous pulp. Amenorrhea and uterine leucorrhea may result, but these are seldom attributed to

the true cause, and are likely to be credited to the general condition of the system.

Diagnosis. It is very seldom that during life any correct diagnosis can be formed, as there are, so far as I know, no positive indications pointing definitely to uterine tuberculosis.

Treatment. If detected the treatment can only be of a general character. It is perhaps a matter of some doubt if the intra-uterine injection of preparations of iodine and bromine, which have been recommended, can be improved upon. I should be inclined to try the effects of iodoform and the chloride of gold and sodium, from the good effects I have seen resulting from their use in some other cachectic ulcerations. A generous diet and every physiological aid to good health that experience can devise, should be afforded the patient.

ATROPHY OF THE UTERUS.

Following the menopause, the physiological action of the uterus is atrophy. It has accomplished its purpose in the economy, its sole function being that of gestation, and it returns to a condition resembling that existing before puberty. In diseased conditions, however, congestion, or chronic inflammation, may prevent this physiological process, and the organ may thus be found, even during advanced life, permanently enlarged.

But there occasionally occur cases in which during the child-bearing age the uterus becomes atrophied, and thus prematurely returns to an infantile condition. Some gynæcologists have considered this to be a state of *superinvolution*, and have so named it. Were atrophy limited to women having passed through the puerperal state, the definition might be considered good, but while an atrophy which may be called puerperal atrophy does follow or accompany the

child-bearing state at times, the fact that it may be a concomitant with other conditions, makes it appear to me improper to consider the terms atrophy and superinvolution as interconvertible. Puerperal atrophy is found in ill-nourished, strumous, or tuberculous subjects, especially where some puerperal inflammation has affected the organ. The uterus in these cases appears to have undergone a species of fatty degeneration, its muscular structure fails to be properly repaired, and the result may be an organ as large, or nearly as large, as would be natural, but soft and lacking normal consistence. In fact the sound has in such a case been pushed accidentally through the uterine walls, and the injury even been repaired by nature, without serious inconvenience.

Another cause of atrophy has been found in the pressure of adjacent tumors, and even fibroids of the uterus, although causing enlargement may produce atrophy. Flexions of the uterus are likely to be followed by atrophy of the uterine walls at the point of flexion.

Symptoms. The prominent symptom which first attracts the attention of the patient is the absence of menstruation, either entirely or in part. If occurring after child-bearing, the absence of menstruation is only noticed after an unusually long time has elapsed without a return. Perhaps, too, other symptoms may by this time present, as a general degree of ill-health, a wasting or shrinking of the breasts, and ultimately a prematurely old appearance. If the atrophy be of the variety known as congenital, the function of menstruation will not have been established, and it is well to bear in mind that one vice or malformation discovered in any individual case renders another more probable, hence there may be with an undeveloped uterus, undeveloped vagina, ovaries, &c., &c. In these cases the general health of the individual may be little affected, or various nervous

symptoms may supervene, occasionally even terminating in epilepsy.

Diagnosis. The diagnosis is not usually very difficult. The entire organ is dwarfed, and hence the vaginal portion of the cervix will be found small, the os small, the canal of the cervix narrow, the uterus easily moved about, and in some cases difficult to perceive by conjoined manipulation, or if found its abnormal smallness will be easily observed. If the uterine sound be introduced, the depth of the cavity, instead of two inches and a half or three-quarters, will be found, except in some cases of the puerperal variety, no more than an inch and a half perhaps. Rectal examination will confirm the small size of the uterus.

Prognosis. The congenital form if existing in a very marked degree, is not considered amenable to treatment, but where atrophy results in a decrease of no more perhaps than a fourth part of the uterus, treatment may be efficacious.

Treatment. In all the forms the general health should be attended to, and the administration of iron and other tonics, if indicated, should not be neglected. Largely, however, the treatment most beneficial in some cases will be local. Thomas recommends the introduction of tents of sea-tangle or sponge every week or two for their stimulating effect. If well borne, an intra-uterine galvanic pessary, Fig. 31, consisting of alternate beads of copper and zinc strung

Fig. 31. Galvanic intra-uterine pessary.

on a copper wire, may be worn in the intervals between the introduction of the tents. At times the pessary is constructed of symmetrical halves of copper and zinc soldered together; or again the two halves are made to diverge, as in the Chambers' pessary. The galvanic action created by such means I believe to be more theoretical than practical,

but the gentle irritation of the uterine stem may prove beneficial. The judicious use of the Faradic galvanic current, passed through the uterus, by placing one electrode against the cervix uteri and the other upon the sacrum, or just above the symphysis pubis, will be found of advantage. For somewhat similar cases Prof. Simpson devised intra-uterine cupping, with a syringe or air pump fitted to a tube like an ordinary metallic catheter, the end introduced within the uterus being thickly perforated with small holes. The internal exhibition of the cimicifuga, helonias, aletris, pulsatilla, compound wine of comfrey and remedies of that class will also be advisable.

STENOSIS OF THE UTERUS.

Stenosis, or contraction of the os and cervical canal, may be congenital or acquired. Congenital stenosis may usually be recognized by even a vaginal examination, from the fact that the cervix seems long and pointed, and the tissue harder and more cartilaginous than is common. The os if felt will be small, but in some cases it is so small as only to be revealed with some difficulty even by a specular examination. In these cases the constriction is most frequently at the external os, while the inner portions of the canal may be usually patulous. Acquired contraction may be the result of injuries received during parturition; from the inflammation and cicatrization following the application of caustics; and from any cause producing inflammation of the cervical canal. Occasionally the anterior lip has projected so as to form a sort of valve, closing the os, or giving to it a curved outline.

Symptoms. Painful menstruation and sterility are the most common and persistent symptoms. For the former the physician is more commonly consulted than for the latter. It is worthy of note that a very considerable contraction may

exist in some cases, without producing painful menstruation, probably from the fact that the rapidity of the menstrual flow is exactly proportioned to the means of escape. On the other hand more than one case has come to my notice in which, although the flow was quite slow and moderate in quantity, the distress was severe, apparently from the fact that the constriction was sufficient to retard the flow until clots were formed in the uterine cavity. So far as sterility is to be considered, it must be acknowledged that physiologists are yet in the dark as to the exact means by which the spermatozoid finds its way to the ovum. Whether, however, it be by any act of imbibition on the part of the uterus, as has been supposed by some, or solely by the locomotive power of the spermatozoa, there can reasonably be no doubt but that the narrower or more tortuous the passage the greater the difficulty in the way of impregnation, and the actual experience of many observers has shown this to be a fact.

Diagnosis. There can be no material difficulty in diagnosis. Added to the symptoms and the pointed, contracted cervix, the sound discloses fully the nature of the difficulty, whether congenital or acquired. If the external os be too small for the passage of the ordinary uterine sound, a small probe may be substituted, for purposes of information as to the condition of the inner portion of the canal and the internal os.

Treatment. Two methods of treatment have been practiced, the one dilation, the other enlargement of the canal. For dilation we have the sea-tangle or sponge tents, metallic sounds, and various instruments for uterine dilation, among which may be mentioned those of Hunter, Miller, Nott, Bell, Thompson, Atlee, Thomas, Vanderveer, Ellinger, Thebaud, &c., &c. Experience has shown, however, that dangers as many and great accompany the plan of dilation as the more

direct plan of enlargement by incision; and furthermore, that even after dilation has been accomplished, there is a great tendency to a return of the old difficulty. A case fully illustrating the point is reported in Schrœder, p. 69, from Barnes, in which "stenosis returned after miscarriage at the fifth month; that is, after an extreme degree of mechanical dilation."

The more direct and radical treatment, by enlargement, is accomplished with scissors, or knife, or both, or with instruments especially devised for that purpose, among which may be mentioned the *metrotomes* or *hysterotomes* of Peaslee, Greenhalz, Briggs, Simpson, White, Stohlman, Coghill, and others. Fig. 32 is a representation of Simpson's

Fig. 32. Simpson's hysterotome.

hysterotome. Being introduced closed, the degree of opening is previously regulated by a set-screw. The general principle involved in these instruments is that of a concealed knife, which, being carried up through the contracted canal in a probe-pointed sheath or protector, is caused to emerge as the instrument is withdrawn, and thus cut the canal larger. Some of the instruments are provided with two knives, so as to cut simultaneously upon both sides, and require but one introduction of the instrument into the passage, while, if the instrument carries but one knife, it must be re-introduced to cut the opposite side. A serious objection to the single knife is, that the second cut is not likely to be as deep as the first, owing to the resisting wall of the canal being weakened by the first cut. Even where the double-bladed instrument is used, it often happens that the cuts are not symmetrical.

Owing to these difficulties, very many operators, I be-

lieve, wisely discard the more complicated instruments, and rely simply upon suitable scissors, supplemented, if need be, by a knife or bistoury. For the operation the patient is placed in the usual position, and with the duck-bill or Sims' speculum the parts are exposed, and the uterus fixed with a tenaculum or forceps seizing the anterior lip, while one blade of the scissors is introduced into the cervical canal, and a lateral cut made through the cervix as high as the vaginal attachment. As the tissues sometimes slip a little from the scissors, the first cut may not be deep enough, and a second clip may be needed; the scissors are then turned around and the opposite side cut in like manner. If the constriction be entirely at the external os, the operation is now complete; but if, upon introducing the sound, any difficulty appear at the internal os, the knife, Fig. 21, will be found proper and convenient to enlarge that orifice. In this part of the operation it is necessary to carefully avoid incising so deeply as to wound the peritoneum. The hemorrhage is not usually very severe, but is at times quite brisk. To control this, sponges wet with a little cool water may be crowded closely into the cut and allowed to remain one or two minutes, longer if necessary. The tenaculum or forceps should have a secure hold, as it is quite embarrassing to have the vagina filled with blood, and the uterus, from which it comes, free to recede as far as the vagina will permit in advance of the sponges used to stanch it.

The cut should now be plugged with a pledget of cotton saturated with a solution of persulphate or perchloride of iron, a sufficient tampon of cotton or linen placed in the vagina to keep the first pledget in place, and the patient be placed in bed. Within twenty-four hours remove the tampon, and usually the cotton pledget next the wound, but if it be strongly adherent it may remain another day. After its removal, a sound should be introduced to break up any adhesions that may be forming, and this or the finger should

be daily used for that purpose throughout the period of healing. Some prefer to introduce a stem pessary, after a few days, to guard against trouble from cicatrization. The operation will necessitate confinement to bed for from four to ten days, with care for two or three weeks. Metritis, peritonitis and abscess are among the evil consequences, and must be guarded against by quiet and rest, even though the patient should feel quite well. The time chosen for operation should be from five to eight days after menstruation has ceased.

HERNIA OF THE UTERUS.

Very rarely the uterus, in its non-gravid state, enters a hernial sac. Primarily such cases appear to be irreducible, crural or inguinal hernia, usually the latter, into which an ovary has descended, in time dragging after it the uterus. Uterine hernia is irreducible, and no specific treatment can be advised. For a more extensive account of the antecedent circumstances connected with this form of hernia, the reader is referred to ovarian hernia, hereafter mentioned.

CHAPTER XI.

ACUTE METRITIS.

Acute inflammation of the parenchyma of the uterus in the non-puerperal state is an exceedingly rare event; during the puerperal condition it is comparatively common. Under all circumstances it must be considered a grave difficulty, especially unless met by prompt and judicious treatment. It is often confounded with peritonitis, endo-metritis and pelvic cellulitis, from which it requires to be differentiated by indications hereafter mentioned.

Causes. Very rarely it may occur idiopathically, but usually as a succedaneum to acute endo-metritis. It may occur in consequence of injuries from violence, or resulting from surgical operations; the use of tents in dilation, or intra-uterine pessaries; from acute congestion attending menstruation; from violent straining or lifting; from sitting on the damp ground, and it is stated that it may follow gonorrhea. Acute endo-metritis may hardly exist for any length of time without inflammation to a greater or less extent being communicated to the subjacent parenchyma, and it would seem to me that a gonorrheal metritis could only be expected as a sequel to gonorrheal endo-metritis. Injuries resulting from blows or violence are rare causes, owing to the secluded and protected location of the uterus. Following the various surgical operations of amputation and incision of the cervix, the appearance of metritis is most common; the dilation of the cervical canal, when injudiciously resorted to or improperly conducted, may terminate in inflammation—a result, in fact, possible where every pre-

caution has been observed. Pessaries, intra-uterine or pressing firmly upon an ante- or retro-verted uterus, are causes sometimes of metritis; and, finally, any cause abrading or destroying the continuity of the mucous membrane lining the uterine cavity, such as the use of caustics, &c., &c., may lead to the same final result. No distinct subdivision of locality can be made, as the entire parenchyma is equally liable, and liable to equal inflammation. Pathologically an acute congestion or stasis of blood distends the capillaries, and, increasing their size, causes pressure upon the nerves, with consequent pain; transudation of serum into the cellular tissue follows, with resulting enlargement of the organ; the white blood corpuscles effused become pus cells, and the inflammation, by their aggregation, may terminate in suppuration; or, upon the other hand, a subsidence of the active symptoms may usher in a favorable resolution, for which the natural vascular character of the uterine tissue and the well-developed lymphatic system afford superior facilities.

Symptoms. A pain, at first dull and heavy but becoming rapidly more severe, ushers in a rigor or chill. Febrile action immediately supervenes, and the pulse raises in a short time to 120 or 130 beats per minute; the temperature of the body is increased ranging from 100 to 102 in the morning, to 106 or 106½ in the evening; the skin becomes dry and husky, the face flushed, and a general feeling of prostration and sickness comes rapidly on. The tongue is furred and dry; vesical and rectal tenesmus may be present with pains shooting down the thighs; the abdomen over the region of the uterus becomes extremely sensitive to the touch, so much so, that any attempt at exploratory pressure causes extreme or unendurable pain; the patient lies with the thighs flexed upon the abdomen to relieve tension of the abdominal muscles; tympanitis is more or less present; the vagina is hot and dry; the uterus feels puffy and swollen, and is extremely

sensitive. Examination with a speculum causes pain, and should not be resorted to as it is useless, since every point of importance can be learned by the touch alone; but if a speculum examination be made, the os uteri will be found gaping, everted and dry, unless endometritis be present, which however, at some stage of the disease is almost certain to be the case, when a discharge will be observed, which at first glairy becomes ultimately purulent. As the disease progresses and passes to a stage of suppuration, the eyes become glassy and sunken, the skin glossy and shining upon the cheeks, erratic chills or shiverings are observed, with nausea or irritability of the stomach and profuse colliquative sweats. The pulse becomes more rapid and weaker, extreme weakness, delirium or typho-mania supervenes, and death closes the scene.

Or owing to the mildness of the attack, the great resisting power of nature, or the use of salutary and beneficial treatment, the symptoms subside, the temperature falls, the fever grows less, the pain recedes, the surface of the body becomes naturally moist, the flushing of the face gives way to a natural appearance, the tongue before dry becomes moist, and the stage of resolution and returning health appears. Rarely the disease terminates in abscess, which may discharge into the uterus, rectum, peritoneum, or after adhesion to the abdominal wall may point externally.

Naturally it will be observed that the opening of the abscess into the peritoneum is fatal, no necessary fatality attending either of the other terminations. If the attack occur during menstruation, the flow is usually checked, but the reverse or menorrhagia may result. With regard to the chill, which it is almost invariably asserted ushers in the disease, it is proper to state that Thomas' "Diseases of Women," p. 230, says: "In the cases which I have seen, this has not been the fact, and should an attack be thus ushered in, I should strongly suspect cellulitis or pelvic peritonitis."

With all due deference to so distinguished an authority, I must be permitted to doubt whether inflammation of the uterus will prove an exception to the rule of nature, that all inflammations are preceded by a chill, all excitations by depression. I do not now call to mind an exception, although in unimportant inflammations, affecting so small an amount of tissue as not to impress the general system, there may be no observable chill. Thus an inflammation of the eye may not be preceded by perceptible chill, yet even here I have observed a very decided rigor. But inflammation of the uterus is a very important affection, impressing very rapidly the entire system, even to its destruction; hence I can but feel that the cases alluded to in presenting no chill were phenomenal. In two cases of idiopathic, and one of traumatic metritis, which I have treated during the past fifteen months, a chill was certainly present.

Diagnosis. Attention to the symptoms already noted, will point to the nature of the difficulty. By abdominal palpation, and conjoined manipulation, the increased size and tenderness of the uterus may be observed. The affection may be confounded with,

1st. Acute peritonitis,
2nd. Pelvic cellulitis,
3rd. Endo-metritis.

The differentiation from peritonitis will be made by observing that in peritonitis, the pain is more acute and lancinating, and with tenderness affects all or nearly all the abdomen; the pulse has the peculiarly hard wiry sharp feeling present in all inflammations of serous membranes; the uterus is fixed, but not enlarged; puffy or tumid to the feel; while in acute metritis, enlargement and puffiness do exist, with limitation of pain and tenderness to the uterine region, unless as may happen in the advanced stages of the disease, the inflammation has extended to the peritoneum; from pel-

vic cellulitis, by the absence of a puffy, hot, sensitive enlargement, occupying some position in the broad ligaments, or about the uterus, which it usually displaces to the opposite side of the pelvis, at the same time rendering it fixed and immovable; from endo-metritis, by the greater severity of all the symptoms, the greater swelling of the uterus, and the absence of the discharge attending endo-metritis. The formation of an abscess in the uterine substance may be known by a gradually enlarging portion, in which at some times fluctuation can be felt, the sensibility is diminished, and, should the abscess tend to an external evacuation, the attachment of the uterus to the abdominal walls will be a proof of the existence of abscess.

Treatment. Absolute quiet and rest in the recumbent posture are of prime importance, and must be insisted upon. If the pain be very severe, raising the hips and depressing the shoulders will be found of service, by causing the uterus to gravitate into the abdominal cavity, and also securing the gravitation of the blood from the pelvis, thus relieving to some extent the pressure. Veratrum should be used in doses sufficiently large and frequently repeated to promptly control the pulse. I know of no remedy that can be considered a substitute, but aconite or gelseminum, or both, might be used in its absence. Opium, morphia or the compound powder of ipecacuanha and opium should be so freely administered as to overcome pain. If from idiosyncrasy the patient cannot take these preparations of opium, the aqueous extract or an infusion of opium will seldom fail to give satisfaction. Other narcotics, as conium, stramonium, chloral hydrate, &c., &c., may be used; at all events, in some way relief from the pain must be as rapidly as possible obtained. To reduce the temperature, and for its tonic and restorative effects, the administration of salicine should on no account be omitted. I prefer commencing its administration in the morning, or at that time of day when the tem-

perature is lowest, but would not desist, should there be an increase of temperature towards evening. Every two to three hours, from five to ten grains should be administered during the prevalence of an abnormally high temperature, to lower which it is the remedy *par excellence;* and as it is administered with a view to decrease the temperature, the size and frequency of the dose must be entirely regulated by the urgency of the case.

Externally upon the abdomen should be laid a bag of hops, wrung out of water as warm as can be borne by the patient, upon the inner or abdominal side of which one or two drams of spirits turpentine have been sprinkled. In some few patients an idiosyncrasy concerning turpentine will be met, the excessive irritation which it produces upon the skin forbidding its use. In all cases it should thoroughly warm and irritate the skin, when thus confined, within one hour, failing in which a fresh supply should be sprinkled on. Care should be taken not to produce vesication, and when the application has caused a brisk smarting, the other side of the bag should be turned to the skin. In place of the hops other similar herbs may be used, or a poultice of corn-meal mush or flaxseed. An infusion of *althea, galium aparine* or solution of acacia should be freely drank, especially if vesical tenesmus be present. For the relief of tympanitis, and to secure evacuations from the bowels, injections of warm water, milk and water, molasses and water, &c., in each pint of which is put thirty to sixty drops of turpentine, should be used as frequently as required—if necessary three or four times daily.

The diet should be nourishing and easily digestible. Should abscess form we are without preventive remedy, and as the chances for its escape into the abdominal cavity are small, it will not be probably advisable to materially interfere with the course of nature. If an abscess tends to point externally, and adhesions have quite evidently been

formed, its earlier evacuation may be properly brought about by the knife or preferably the aspirator. The greatest danger is from empyema, which appears rapidly, owing to the development of the uterine lymphatics. It will be indicated by irregular chills, followed by a hectic flush on the cheeks, and profuse perspirations, with great debility. In this condition the nitrate of soda in doses of five grains may be given in mucilage of acacia every hour or two. It will be found more pleasant than the sulphate of soda, which has been used in a similar manner for the same purpose.

Especial attention must be paid to the nourishment and sustentation of the patient. Beef or mutton tea should be systematically taken, and if well borne, some form of alcoholic stimulant judiciously administered will be found advantageous. Every three or four hours the patient should be bathed with sulphate of quinine or cinchonidia in diluted alcohol or whisky, or rubbed with the same remedies mixed with lard, and an infusion of *baptisia*, an ounce to the pint, may be given in teaspoonful doses every third hour.

If in the progress of the disease a purulent discharge should at any time appear, the vagina should be syringed out with sulphite of soda, one or two drams to the pint, or the infusion of *baptisia* heretofore mentioned, may be used in the same manner. In the earlier stages of the inflammation advantageous use may be made of injections of slippery elm, with or without opiates, according to the amount of pain. In the stage of convalescence care should be used that the patient does not too soon resume her ordinary avocations, as there will even for weeks be a tendency to a return of the affection in a sub-acute or chronic form.

CHRONIC METRITIS.

I have chosen to adhere to the term "chronic metritis," believing that by so doing there will be less likelihood of confusion in the mind of the reader, than would exist by adopting any of the many synonyms which have, not without good reason, been adopted by gynæcologists in treating of this affection. Perhaps upon no subject connected with uterine pathology, has there been so great a difference of opinion, or "war of words," as upon that under consideration. Nor is the difference in belief as to the actual pathological condition so great as would be supposed, the greatest difference of opinion existing simply as to nomenclature.

Prof. Thomas prefers the name of "areolar hyperplasia," which, while conveying to the mind a probably correct idea as to the physical tissue changes of the uterus, fails, to my mind, to be as suggestive of the symptoms to be met as does the name at the head of this article, which, it must be confessed, is not without some objection.

Not to multiply words upon the subject I quote from Schrœder, p. 102, as in many respects expressing my own views: "My conviction is, that we cannot dispense with the clinical picture of chronic metritis, for we should otherwise be obliged to separate closely connected pathological conditions having the same symptoms and requiring the same treatment. Neither do I consider the term 'chronic metritis' to be so very improper, because it is probably nothing more than a war of words, whether that condition be called a hyperplasia of the connective tissue of a hyperæmic uterus, or the product of an extremely chronic inflammation. Indeed I should be loth to dispense with the name 'inflammation' for this very condition, partly because the treatment needs to be decidedly anti-phlogistic, and partly because in the early stages we always have the clinical

symptoms of inflammation, hyperæmia, tumefaction and pain. It should be noted, in addition, that all the cases in which the rather rare termination in induration—a change which occurs only at a late stage—has not taken place, undergo from time to time exacerbations, which present the features of a sub-acute, occasionally of even a quite acute, inflammation.

"We therefore include under the term 'chronic metritis' those cases also, placing them at the head of the list, because they are the most numerous, which originally arise independently of inflammation, such as defective puerperal involution; because inflammatory symptoms, hyperæmia, swelling and pain occur during their course," &c., &c. And further on: "The collection of symptoms known as chronic metritis is thus made to comprise a large number of cases of etiologically different nature, but presenting clinically the same appearance and requiring the same treatment." Some of the other names applied are "chronic parenchymatous metritis," "infarctus," "engorgement," "irritable uterus," "inflammatory hypertrophy," "habitual hyperæmia," "sub-involution," "chronic congestion," &c., &c. At least the disorders variously described under the foregoing captions are so identical in symptoms and treatment, that conciseness and brevity demand a simultaneous consideration.

Causes. Rarely the chronic follows the acute form of metritis, except it be as the result of imprudence during convalescence from the acute form; but by far the most prolific cause is to be found in the various changes and accidents incident to parturition. Following parturition the process of *involution* is accomplished by a fatty degeneration, the traces of which are observable as early as the third or fourth day; absorption follows with the reproduction of fresh muscular structure, and the organ which at delivery weighed from three to four pounds, at the end of eight weeks

should have returned to nearly its original size and weight, and weigh about one and a half ounces. This process may be arrested by too early rising from childbed, by colds, by nervous anxiety, &c., &c., and it is thought by some that there are constitutional causes favoring the result.

Another prolific cause of chronic metritis is to be found in the menstrual flux. Where, owing to constitutional relaxation, this flow is prolonged for a week or ten days, a gradual dilation of the capillaries may ultimately take place, and an enlargement of the organ with a greater or lesser degree of chronic congestion ultimately result. Or, either from ignorance or inattention, women often uselessly expose themselves at the menstrual period to the effects of cold, severe exercise and the like, thus laying the foundation for the superstructure of chronic inflammation.

It is much to be regretted that delicacy or false notions of modesty in this matter prevent the proper instruction of girls and young women by their mothers, or other older female friends, upon the proper care of their health at this critical period. In perhaps the majority of cases the young girl comes to maturity, and commences the menstrual function, without any more useful or extended view of the perils and duties incident upon the condition than one of the domestic animals.

The result is as might be foreseen; in a vast number of cases the seed is sown which, after marriage and the commencement of childbearing, vegetates into a harvest of chronic inflammation. As largely shedding light upon the causes of this affection, the following observations by Schrœder are valuable: "Of one hundred and two patients, of whose cases I have kept special notes, there were only seven who had never been pregnant. Of these two had an intact hymen; one masturbated; one had been married only a fortnight; and three, although married, were sterile." Of the others several had miscarried; and it is worthy of note

that miscarriages are often followed by chronic inflammation, since women are not likely to be as careful during the period of involution as they are following an ordinary parturition.

Laceration of the cervix during parturition often leaves behind a congested condition, which terminates ultimately in chronic metritis.

A congenitally narrow cervix, or a cervix narrowed by flexion, is also a potent cause of the condition under consideration, from the repeated congestions caused at each menstrual period.

Excessive sexual intercourse, more especially when occurring near the menstrual period, and the disturbances in the circulation brought about by heart diseases, and especially diseases of the liver obstructing the portal circulation, the pressure of abdominal tumors or neoplasms of the uterus itself, may favor the access of chronic inflammation. The cervix or body may each alone, or both together, be affected.

Pathologically the disease consists in an increase of areolar tissue, according to some observers, without a corresponding increase of muscular fiber, while according to other observers, the relative amount of muscular fiber is increased. It is difficult to account for this radical difference in opinion, for it would seem that the observers have not the excuse of the two knights, who fought upon the color of a shield, of which each had only seen the opposite side from the other. Whether, therefore, it be truly an "areolar hyperplasia," or a "hypertrophy," is not satisfactorily determined; and, leaving those who desire to investigate that part of the subject further to the various works on pathological anatomy, I shall proceed with more practical details.

Symptoms. The patient finds her health not as good as usual, and after a time pains, dull and heavy are felt in the sacrum, the pelvis and the hips; there is a sensation of ful-

ness and weight in the pelvis, with a varying increase in the menstrual flow, amounting at times to a menorrhagia. As the disease progresses all these symptoms are increased, not only is menorrhagia present at each menstrual period, but at intervals between the periods there will be outbursts of blood, often perfectly fresh and florid.

Disorders of the digestive apparatus supervene; the bowels are constipated or irregular; the appetite poor or variable; the patient becomes anæmic from loss of blood; despondent from long continued pain and ill health. A vaginal examination discloses the uterus low down in the pelvis, the cervix hard, the os in those who have borne children open and everted, especially if as is usually the case endo-metritis be also present, and the entire organ feels heavy and unwieldy, though not necessarily fixed.

The sensibility varies from nothing abnormal, to a tenderness so great that the least touch causes unbearable pain. There is usually soreness upon external pressure over the uterine region. The uterus, where body and neck are involved, is increased in size in every direction, and the depth of its cavity may be increased to the extent of seven or eight inches. Pain and sensibility upon the anterior and inner surfaces of the thighs are common, but not necessarily present symptoms. Aside from the pains of the head which may result from some complication, the peculiar pain symptomatic of other uterine disorders, a pain, sensation of heat, or at times formication upon the top of the head, will usually be present.

Prognosis. The disease tends to run a long course, reaching over perhaps years. While of itself not terminating fatally, the system may be so broken down by the repeated losses of blood, the pains and attendant ill health, as to render life an almost undesirable burden, and facilitate the invasion of other disorders that may terminate existence. Occasionally a spontaneous termination may occur in what

has been termed "induration;" a hardening of the newly formed tissue, and with this a gradual subsidence of the active symptoms, and a condition of affairs nearly approaching cure.

If occurring near the climacteric that period may be made one of increased peril, and irregular or partially periodical hemorrhages may occur for years, after the "turn of life" should have been passed; hence it will be seen that the menopause does not always, though it may sometimes, bring about a restoration to health. While therefore our prognosis can not be regarded as perfectly satisfactory in regard to favorableness, we can, assisted by suitable external and moral circumstances, materially better and improve the condition of the patient, if even our results do not so nearly approach a cure as to be deemed quite satisfactory.

Unfortunately our patients usually lack the patience to pursue for months or even years, the steady course of treatment necessary; and perhaps equally as often is it the case that family cares or other circumstances make the external surroundings everything but favorable.

Treatment. Evidently an "ounce of prevention" is here "worth a pound of cure," and we should at all times endeavor to prevent, so far as is in our power, the contraction of a chronic metritis. Attention to the puerperal state, by the avoidance of all exposures during the period of uterine involution; too early rising from the bed; care or mental anxiety during the puerperal month; exposure to cold and the like should be positively avoided. One of the most rebellious and persistent cases I have ever seen followed a confinement, in which within a week from delivery two older children contracted measles. The mother frequently rose from bed to attend to them, and yet they were so badly attended to that in the case of one two years of age a retrocession of the eruption occurred, followed by two or three weeks of serious illness,

during which the mother got up and held the child almost continually. The result has been up to this writing, three years of poor health, amounting at times to almost misery, and the prospect though better, is yet good for two or three years more of invalidism, if even a reasonable recovery ever occurs.

Perhaps at the present time the majority of gynæcological testimony is in favor of a persistent local depletion, where the disease is seated. Certainly it has long been thought advisable, by leeches, scarification and cupping, to take blood from the uterus frequently and persistently throughout the course of treatment. Upon this point I can not better comment than by quoting from Thomas' "Diseases of Women," pp. 290 and 291, as it accords with my own experience and belief. He says, "I find myself more rarely every year resorting to leeches and scarifications in the treatment of uterine affections, and although I am not positive of the fact, it appears to me that others, with whose practices I am familiar in this city, are falling into the same habits as myself. Where the body of the uterus is the chief seat of disease, depletion, upon theoretical grounds, should be followed by most excellent results, and yet it is not so. So decided is my experience upon this point, that I can not but believe that that of others must be similar to it. As Nonat has pointed out, in cervical inflammation local depletion is productive of good results, for which we look in vain in corporeal disease."

Here I must be permitted to observe, that even in cervical inflammation I have never seen any such good results follow local depletion as would lead me to adopt it as a curative means, nor can I see by what philosophical reasons good should be expected to follow the practice. If a degree of tension upon the capillaries were present, threatening or likely to lead to their disorganization, I can see that the relief of pressure by scarification may be a temporary relief, and perhaps a desirable object to attain, but the case is usu-

ally I think hardly supposable. It is possible for us to consider that in some such cases nature does by ulceration, and accompanying exudation or drainage of serum, accomplish a similar effect, and I can not therefore say but some rare cases may be benefited by such a course.

Prof. Thomas further says: "I have yet to meet with a case of areolar hyperplasia of the body, unaccompanied, be it understood, with cervical disease, which has been materially benefited by the most methodical and systematic local abstraction of blood, unless amenorrhea was a symptom. In case this be so, a copious abstraction by leeches during the menstrual epoch will sometimes give relief. At times the leeches when applied to the cervix will give great pain by their bites, under which circumstances they should, at the next period, be applied to the perineum."

Of local remedial measures, I mention first the bath. Although not of universal benefit, the hip and vaginal bath will but very seldom fail to be of benefit. Either may be used singly, or both conjointly. In either case the effect of warm water, which, if desired, may be medicated with any anodyne or emollient that seems indicated, should be made continuous for from ten to twenty minutes. For this purpose either the ordinary Davidson's syringe or the fountain syringe may be used, and with the former the patient may sit over or in a tub containing the bath. Cold water has been used as a vaginal injection, and with the same idea in view, viz., to stimulate the uterine tissue to activity and thereby promote absorption. In either case the temperature of the water, the force of the current and the length of the application, must be subject to the sensations of the patient, changing or stopping the application should it be productive of much discomfort. I have seen at least one patient with whom no variety of uterine bath I could devise was tolerated with advantage, but was attended with discomfort.

Next in order may be considered the vaginal suppository. Cacao butter may be medicated with such substances as seem demanded, and, being formed into suppositories or pessaries, these may be used with benefit, usually one being introduced at night, and at times even more frequently. As the application slowly melts its medical properties are thus, for some length of time, kept in connection with the diseased uterus, and their beneficial effects thereby gained. In this manner I have used, as anodynes, opium, belladonna, hyoscyamus, conium; as alteratives, the iodide of potassium, muriate of ammonia, &c., &c., and in short any medicinal substance which seems indicated, and can be procured in the form of a powder or solid extract, may thus be advantageously and effectually applied.

But the greatest benefit must be expected to follow systematic general, rather than local treatment. To this end the surroundings of the patient must be made of proper character; the general health be sustained by appropriate tonics and alteratives; and I wish here to assert my belief that, as a rule, desirable alteratives are also tonics, and *vice versa*, a remedy which, by virtue of its action, exalts every vital function and sustains and supports Nature, enables the system to combat the encroachments of disease and to restore already perverted action. But if, in our list of alteratives, we carry remedies whose tendency is to break down and destroy, their field of usefulness is a narrow one, upon whose confines it is certainly hazardous to enter.

For the first mentioned indication, the improvement of the general surroundings of the patient, it is necessary to see that her avocation be not too laborious or fatiguing. And at this point we are confronted by the difficulty that very many of such patients are women in the lower or middle walks of life, the mothers of large families, whose care can hardly be delegated to other hands; yet this is but their and our misfortune, of which we must make the very best possible disposition. Upon the other hand, enforced or con-

tinual confinement to the bed, or even room, is almost as much to be dreaded as would be the opposite extreme, since in this way the general health could but suffer, and we can only expect to attain a reasonable recovery when aided by a fair to good general state of the system.

Hence, moderate out-of-door exercise should be part of the treatment—such an amount of out-door exposure as will keep all the physical forces at their best. Sexual connection must in most cases be prohibited. If the condition *absque marito* cannot be otherwise enforced, a complete separation of husband and wife should take place for some months. Upon this point, however, it has been thought that, with women of strong sexual desires, their occasional gratification might prove more salutary than enforced and complete abstinence. Such cases will be rarely found. And finally, a complete change of climate, scenery, and mode of living will often prove a valuable adjuvant to other treatment.

For the second indication a variety of means will be found useful, and the attention of the practitioner being called to the indication, his own ingenuity will often supply the best means. I will however mention that in my own experience I have found nothing superior to the vin. symphyt. comp., combined with fl. ext. gossypium in the proportion of four or five of the former to one of the latter, the mixture to be taken in doses of one or two teaspoonfuls three or four times a day, according to the condition of the patient and her susceptibility to the effects of medicine. This combination, after being taken for two weeks, should be succeeded by some different similar prescription as the syr. mitchellæ comp., in dessert-spoonful doses three times daily. Another favorite prescription is the following:

℞. Ext. viburni prun. fl., ʒiij.
Ext. conii fl., ʒj.
Syr. simp., ʒiv.
M. Sig. Dose a teaspoonful three times a day.

The helonias and aletris are undoubtedly good general tonics, and hence may be advantageously employed, but I have failed, after years of trial, to observe any especial effect as "uterine tonics" from their administration.

For the third indication, the tinct. corydalis comp., the syr. stillingiæ comp., the syr. araliæ, &c., &c., combined, if the strength of the patient and her general condition be good, with potass. iodide, may be used. The local application of iodine in some form, and of such strength as not to prove an irritant, will be found useful. Where the cervical canal is sufficiently open, a camel-hair pencil dipped in the tincture of iodine, in some cases clear, but usually diluted, should be passed in, and the entire cavity be therewith painted.

The application of iodized cotton has been highly recommended by some. It is prepared as follows:

℞. Potass. iodidi, ʒij.
Iodini, ʒj.
Glycerinæ, ʒviij.

With this mixture eight ounces of cotton is to be saturated, after which it is to be carefully dried. I have made no use of this application, and cannot personally speak as to its merits, but should suppose it might be a useful application.

CHAPTER XII.

ENDOMETRITIS.

Inflammation of the mucous membrane lining the uterus is called endometritis, and may be either acute or chronic. It is in either case styled general, when the membrane lining both the cervix and body is affected; cervical, where affecting the cervix alone, and corporeal, where affecting only the lining membrane of the body.

Acute endometritis. Idiopathic acute endometritis is not a very common disease, and is yet less frequently recognized. What may be termed accidental endometritis appears to me to be the more common form; yet here it is but proper to state that to this form our attention is more likely to be called than to the first mentioned variety, as will be readily understood upon a consideration of the causes.

Pathologically we may term this disease a catarrh of the uterus; the mucous membrane assumes a velvety appearance, a congested state of the mucous and sub-mucous tissues prevails, occasionally terminating even in the complication, or supervention upon the original disease, of inflammation of the uterine structure. The mucous membrane becomes softened, and in a measure disorganized, so that often it may be easily scraped off with the finger-nail, or any convenient instrument. The mucous secretion of the uterus is increased in quantity with the progress of the disease, and altered in character, being at first thin and watery, but ultimately from admixture of pus cells becoming whitish, opaque and curdy or turbid, even purulent.

Causes. Idiopathic endometritis is perhaps most fre-

quently caused by exposure to cold during menstruation. It may also occur in the course of infectious and prostrating fevers, a result to which a scrofulous or tuberculous diathesis will contribute. A catarrhal disposition, meaning by the term that tendency exhibited by some persons to nasal, pharyngeal, or vesical catarrh, is an active factor in the production of this disorder.

What I have alluded to as the accidental variety, is caused by direct injuries to the part, as from intra-uterine pessaries, the use of the sound, the application of caustics or acids in the treatment of vaginal or cervical disorders; also vaginitis, simple or specific; excess in coition, and phosphorus poisoning (Schrœder). Flexions of the uterus are, by the retention of menstrual blood or the secretions of the uterus, believed by Hewitt to be a very potent and common cause.

Symptoms. A chill more or less decided is followed by fever, which may not however be high. Usually a feeling of weight in the pelvis, accompanied by some pain, is present. Unless the substance of the uterus be affected, pain upon abdominal pressure will not be present. Slight if any enlargement or tenderness of the uterus is present, the introduction of the sound however causing distress, aud usually the discharge of a little blood. On this account, and as nothing is generally to be thereby gained, its use is not advisable. The speculum discloses a slightly opened and everted os, from which issues a discharge at first thin and watery, but after a few days becoming more opaque, or as has been stated above, whitish or purulent.

The vaginal portion of the uterus is often found reddened and sometimes eroded. Micturition is frequent, and may be accompanied by some strangury. The discharge becomes acrid, and produces an increased vaginal discharge and external irritation and pruritus, and if the

discharge reach the thighs, it will in persons of a sensitive and thin skin often produce a tingling and itching prurigo. If the disease be primarily corporeal it will soon from this cause become general, while on the other hand a cervical inflammation with less rapidity tends to become also general. The uterine discharge is alkaline, the vaginal acid; the resulting fluid formed by the admixture as it escapes from the vulva may be, therefore, either acid, alkaline or possibly nearly neutral.

Prognosis. In almost every case Nature alone accomplishes a cure in from three to six weeks, occasionally however the relief being but partial, owing to the supervention of the chronic form. Exception should be made of cases of a gonorrheal origin, where there is a tendency to spread of the disease to the Fallopian tubes, and through these to the peritoneum, causing danger to life; also to cases in which the cause is flexion in any degree or form.

Treatment. Rest, quiet and a recumbent position are among the most urgent demands. In fact a case is quite well treated by these means alone. But we may improve by adding special sedatives for the fever in the first stage, and opiates should pain be present. Free vaginal injections of thin starch containing a little infusion of opium, and sulphite or bi-sulphite of soda, are useful as promoting cleanliness and serving to remove the acrid discharges, of themselves promoters of disease. The diet should be simple and nutritious, and astringent injections or applications may be used. Strong cathartic remedies are to be discarded.

CHRONIC ENDOMETRITIS.

Theoretically chronic endometritis may be cervical, corporeal or general. Practically we shall seldom meet with corporeal endometritis alone; we often meet with both the cervical and general forms. This is as it might be supposed

would be the case. The discharge always present, and constituting a prominent symptom of the disease, is so acrid and infectious that I cannot conceive it possible that the body should be long affected without also infecting the neck, and I confess I never have met with such a case, although for years constantly treating the other forms of the disease. Where the disease is cervical there is a disposition from contiguity of surface for the body to become affected, yet I am confident that for months the affection may adhere to the cervix alone before becoming general.

Possibly, however, upon no one point are observers more at variance than upon this, as the difficulties attendant upon an acute and reliable diagnosis are not a few. As illustrating the differences of opinion I here quote from Simpson, who says: "It is comparatively rare to find endometritis going on for any length of time without the mucous membrane lining the cervix participating in the mischief, *which may extend to the vaginal canal as well.*"

The italics are my own and express not only my own experience, but at the same time to my mind go to prove the extreme likelihood which I believe exists, that inflammation of the body, where existing primarily, will in a short time reach the cervix from infection if in no other way.

Schrœder says: "Since in endometritis of the body the cervix is also involved, we shall find with it the most important symptoms of cervical catarrh." Dr. Bennett regards it "of rare occurrence." Dr. Byford has seen two cases. Dr. Thomas, in eighteen months, met with nine unquestionable cases. Klob believes it quite common, while completely at the other extreme may be placed Aran, who believes inflammation in the cavity of the body more common than in the cavity of the neck of the womb. It is impossible to harmonize such discrepancies of opinion, or in any way to account for them. Reasoning philosophically I should believe it impossible for corporeal endometritis to exist singly for two

weeks, and my own experience would lead to precisely the same conclusion.

Causes. The chronic may follow in some cases the acute form, but it is generally believed it is more likely to arise independently. Certainly the known and recognized attacks of acute endometritis would not, were all of them to terminate in the chronic form, be sufficient to furnish all the cases of the latter met with. Exposure to cold or fatigue during menstruation, anxiety of mind, too rapid child-bearing, intemperance in sexual intercourse, the improper use of uterine sounds or intra-uterine pessaries, abortions, vaginitis and perhaps others are among the exciting causes which produce the disease.

All the exciting causes are rendered more operative by the existence of certain predisposing causes, as scrofula, syphilitic taint, anæmia, and the cachectic condition which, perhaps independently of either of the first mentioned causes, is with many persons present, and is denoted by a readiness upon the part of all the mucous membranes to take on catarrhal inflammation.

Symptoms. Prominent among the symptoms is a discharge which continues with occasional exacerbations and diminutions indefinitely, and is classed by the patient as a leucorrhea. Accompanying this a pain in the region of one or the other ovary is often felt at times, a tenderness of the anterior and inner surface of the thighs is often present, with sensations of a peculiar character upon the summit of the head, sometimes described as a hot feeling, at others as a pain, and tenderness upon pressure over the second cervical vertebra. The discharge often produces excoriations of the labia and even the thighs, and a disagreeable pruritus is very common.

As the disease progresses a large group of sympathetic symptoms are evolved, for some of which the patient fre-

quently demands treatment, entirely ignoring the cause. Prominent among these symptoms are dyspepsia in its various forms, palpitation of the heart, constipation, nervousness, restless nights, and with all and caused by them all, a progressive debility and emaciation. The menstrual discharge may be little altered, especially in the cervical form. In general endometritis there may be an increased flow, but I have more frequently observed it diminished in quantity, offensive in smell, and black or tarry in appearance. From atrophy or destructive change of the mucous membrane, a condition, bordering upon if not actually attaining amenorrhea, may ensue.

Sterility is almost universally present for several reasons. The acrid character of the discharge is such as to endanger the vitality of the spermatozoa, if indeed from its copiousness they are not washed away and denied ingress to the uterine cavity; the tumid and swollen condition of the mucous membrane of the orifices of the Fallopian tubes may preclude the passage of ova, and even should all these difficulties be overcome, the altered and diseased condition of the uterine membrane is not calculated to afford a genial attachment or nutrition to the impregnated ovum. The interior of the uterus is sensitive when touched by the sound, but unless the inflammation has extended to the parenchyma of the uterus, that organ is not usually sensitive to external manipulation.

Diagnosis. This is not attended with difficulty in a general way; in its minutiæ more care must be exercised. The general and sympathetic symptoms mentioned are sufficient to call the attention to the seat of the disease, but nothing short of physical examination can render diagnosis certain. The vaginal examination will disclose to the exploring finger a vagina bathed usually with a more than naturally abundant secretion. The os uteri is more or less open, often

without difficulty admitting the end of the exploring finger. At times its orifice seems irregular, eroded or granulated to the touch, but an extensive degree of disease is not inconsistent with a smooth and regular contour. The lips seem tumid or swollen, often everted; the cervix may or may not appear enlarged, depending upon affection of its parenchyma. The uterus may appear somewhat enlarged, but usually only to a trifling and inappreciable extent, unless the inflammation has extended to the substance of the body.

The speculum discloses to the sight all that has already appeared to the touch, and in addition the escape of a ropy, transparent, semi-transparent, opaque or purulent discharge escaping from the os. In some cases granulations about the os are seen to bleed a little from the touch of the speculum. The sound if the cervix alone be affected, encounters a little difficulty in passing the internal os, but if the disease have affected the body it passes readily, and by contact with the interior inflamed surface causes pain with not infrequently the escape of a drop or two of blood. If the inflammation be corporeal only, the same general symptoms I should expect would be present without evidence of disease of the cervix, including, I suppose, absence of preternatural patulousness or eversion. As in hundreds of cases I have never seen such a case, I can only depend upon the authority of eminent writers for the possibility of the existence of such a condition, and can only insist upon its extreme rarity.

Prognosis. In cervical endometritis alone the prognosis is very favorable. In the general form still favorable, but more especially guarded as to the length of time required for treatment, and this chiefly from the greater difficulty of making suitable applications to the part affected. There is no doubt but that cases have been terminated spontaneously, such an event being rare and favored by the passage of the climacteric or some great change in climate, regimen, general

surroundings and the like. The disease, if unarrested by treatment, while like some others not in itself fatal may, by its embarrassing effects upon the general health, indirectly lead to fatality upon the incursion of some other malady.

Treatment. The treatment is two-fold; *general* and *local.* In the general treatment we may first advert to all the sanitary measures in the knowledge and at the command of the practitioner. The avoidance of fatiguing and exhausting employment, of sexual excesses, the observance of correct habits in bathing, sleeping and out-of-door exercise, a nutritious and not over-stimulating or rich diet, are of first importance. In addition such general favorable changes of climate and surrounding influences as are practicable will, though not a necessity, prove salutary.

Internally. Internally the *viburnum prunifolium* in infusion, fluid extract, or in some cases tinctured in gin, will be found a good remedy. This should be alternated with the *compound syrup of mitchella*, and for either with good effect may be substituted the *vinum symphiti comp.* with *fluid extract of gossypium* in the proportion of three of the former to one of the latter. These remedies, either of them, after administration for two weeks may be changed for either of the others. Locally there is hardly an end to the treatment that has been adopted. Remedies are applied in liquid and solid forms, and in form of an ointment. Liquids may be applied with a camel-hair brush, or in some cases by injection. The remedies which in solution I have used with benefit are:

Nitrate of silver, grs. xl, to distilled water, ℥ j.
Potass. permanganate, a saturated solution in water.
Sulphate of zinc, grs. x, to water, ℥ j.
Chloride of zinc, grs. v, to water, ℥ j.
Chloride of gold and sodium, grs. v, to water, ℥ j.
Persulphate of iron. Monsel's solution.

Glycerine, ℥j, and tannic acid, ʒj.
Glycerine and extract of pinus canadensis, equal parts.
Potass iodide, ʒj, to water, ℥j.
Pyroligneous acid, one part, to water, three parts.
Preparations of hydrastis canadensis.
Quinia and cinchonidia sulphates.

Besides these remedies it has been recommended to use the tincture of iodine properly diluted; a saturated solution of sulphate of copper; the tincture of iron; acetate of lead; carbolic acid and probably some other remedies. If I have any preference it is for the nitrate of silver in most cases, the other remedies ranking perhaps in my experience in about the order mentioned.

Mode of application. As already mentioned remedies may be applied in the solid form. The stick nitrate of silver has been introduced and left within the uterine cavity and there allowed to expend itself. Fortunately nature here proves a kinder friend than the heroic individuals who resort to such treatment; and the offending nitrate of silver soon becomes coated with a mass of coagulated albumen and is thus rendered comparatively inert.

While this fact prevents the serious consequences that at first thought would seem inevitable, the operation usually causes intense pain, requiring for its relief the hypodermic injection of morphia, the administration of chloral hydrate, &c., &c. I have never seen anything to lead me to believe

Fig. 33. Lent's caustic probe.

such heroic treatment necessary or best. Instead, however, of leaving the stick nitrate of silver in the uterine cavity it has been introduced and applied by such instruments as Lent's caustic probe, Fig. 33, or even Lallemand's porte-

caustique, Fig. 34, by means of which the caustic is made to reach the entire mucous membrane.

Fig. 34. Lallemand's porte-caustique.

The practical objection that has occurred with me in this mode of application, and which led me twelve years ago to discard it, has been the fact that at times the effect of the application would be too great, an unnecessary destruction of tissue has occurred, and delay in the healing process has been the result. Several instruments have been invented under the name of ointment-syringes for the introduction of medicated ointments into the uterus, where they are allowed to melt and affect the parts. For the application of medicinal agents in the form of ointments to the interior of the uterus, Lent's ointment-syringe, Fig. 35, may be recommended as convenient and efficacious. I have never had personal experience with this mode of application, but can see no reason why it may not in some cases be a valuable and useful means of medication.

Fig. 35. Lent's ointment-syringe.

The use of injections to the uterine cavity has for a long time been discussed, and both recommended and discouraged.

Its advantages are the certainty and ease with which any given application may be made to all parts of the cavity. Its disadvantage is the possibility of a patulous condition of the Fallopian tubes, through which the injection may reach the peritoneal cavity, thereby exciting very severe if not fatal peritonitis. It is also thought that in some conditions of the uterine vessels absorption may be in

this way effected, thus setting up uterine colic. I do not consider this point proven, but it has occurred in the practice of most gynæcologists that even an ordinary vaginal injection has passed through to the peritoneal cavity, causing great pain if no more. I have many times seen such cases. We must therefore consider intra-uterine injections as requiring great care, lest they become instruments of injury instead of benefit.

In all cases it is necessary to see that provision be made for the free return of injected fluids to the vagina. Where the cervix is well open, free vent is thus formed for this purpose, but to meet the requirements of those cases where the cervix is nearly or quite naturally closed, the double canula intra-uterine syringe of Dr. Molesworth, or Reliquet's double catheter may be used. These instruments undoubtedly do much to remove the existing danger. If the practitioner will, in all cases of proposed intra-uterine injection, first inject a little tepid water with fully as much force as it is intended to use with the injection, he will, if the tubes be unduly open, be apprised of the fact by the smart but innocent colic which will follow his experiment, and which should warn him not to inject a more powerful remedy. In all cases the rule should be observed to inject the smallest quantity of fluid consistent with making the application universal. With these precautions I have scores of times injected the uterus with never once an unpleasant effect.

The method which has given me the most satisfactory results has been the application of liquid remedies by means of a camel hair pencil. The os and cervix being exposed, the discharges are to be wiped away with strips of old cloth wound upon a uterine sound. Having first ascertained the curvature of the uterine canal, a strip of cloth should be wound upon the sound, and thus carried into the cavity to effectually wipe away all mucus. This done, the hair pencil, securely attached to a long handle, is dipped in the solu-

tion used and carried up with a rotating movement to the fundus.

Again and again the brush is wetted until the application reaches every part of the cavity. Usually five days should elapse between the applications. As the restoration to health approaches the cervix uteri tends to close, making the introduction of the brush difficult. Care should therefore be taken, from the first, to carry the application so fully within the cavity as to relieve the corporeal disease; otherwise after a brief period of apparent health the patient requires treatment again for a condition as bad as the first. Where the treatment has nearly subdued the difficulty, or if it be of a very mild type, the application of the muriate or sulphate of hydrastia is useful. The brush first wet with a little water is rubbed in the hydrastia and caused to take up as much as possible, when the application is made as before. In a similar manner the sulphates of quinia and cinchonidia are useful.

ULCERATION OF THE OS AND CERVIX UTERI.

This term is applied very vaguely to a variety of conditions. At times the appearance presented resembles somewhat that of a superficial burn, by which the mucous membrane has been denuded from a greater or lesser portion of the cervix. This raw and granular appearing surface is covered with mucus which may be serous in appearance. The os is everted, but simple eversion of the os may be mistaken for ulceration. Even by the introduction of the speculum it is possible to produce an eversion of the os (Hewitt) which may be mistaken for a diseased condition of the part, a mistake however easily rectified by changing the position or bearing of the speculum, when the parts will assume their natural position.

Again we may have a true ulceration of the cervix, which

may be due to scrofulous or other vice of the system, and whose appearance will so nearly accord with that of ulcerative processes of mucous membranes elsewhere, as to render it impossible to make a mistake in diagnosis.

Syphilitic ulceration. The presence of true chancre upon the cervix has been observed, but rarely. Its appearance is precisely the same as that of chancre occurring elsewhere, but its specific character can only be verified by inoculation with the virus, and the production of chancre.

With regard to patients affected with secondary syphilis, it has been asserted that "almost all cases in which leucorrhea and disease of the os and cervix uteri are present in women suffering from constitutional syphilis, the uterine symptoms are a genuine manifestation of the constitutional or secondary disorders;" but I can not perceive by what process of reasoning a syphilitic woman is debarred from the same likelihood that pertains to other women, to be afflicted with these disorders, so that all her afflictions may legitimately be charged up to the syphilitic taint.

Causes. I have long been convinced that ulceration was but an advanced stage of inflammation, and hence its causes are those of cervical inflammation, as detailed under the head of cervical endometritis. If we say that in cases of prolapsus the irritation to which the part is exposed produces ulceration, is it not true that that irritation first of all causes inflammation? If then inflammation do not terminate in resolution, but is of so active a character that destruction of tissue supervenes, we have the phenomena of ulceration. As to frequency I believe that a real ulceration is infrequent.

Prognosis. With proper care and attention in all cases favorable.

Treatment. Should any cause be discoverable, as displacement of the organ or anything in the habits of the patient

predisposing to the disease, it must be so far as possible removed. For the rest, tonic, astringent and anodyne applications will effect a cure. In this connection I wish especially to recommend the application of glycerine and tannin, (glycerine ℥j, acid tannic ʒj,) with a camel hair brush every second or third day, with injections of an infusion of hamamelis (hamamelis ℥j, water Oj,) night and morning.

The constitutional measures will be such as keep the general health in best condition, and will therefore suggest themselves in each individual case.

CORRODING ULCER.

It is usually believed that the disease to which this term has been applied, is simply epithelial cancer. Its course is slow, in treatment it proves intractable, and in result usually fatal; yet years may elapse before its termination. Unlike ordinary cancer it is usually confined to the cervix alone and does not encroach upon the vagina or contiguous structures.

The subject of treatment properly belongs under the head of cancer of the uterus, to which the reader is referred. Care in diagnosis will avoid the mistaking of this form for the curable forms of ulcerative disease.

CHAPTER XIII.

FIBROID TUMORS OF THE UTERUS.

Uterine fibroids or fibroid tumors of the uterus may be classed as,

1st. Sub-serous or sub-peritoneal.

2nd. Intra-mural, interstitial or parietal.

3rd. Sub-mucous.

4th. Polypoid.

The sub-serous or sub-peritoneal fibroid has its location upon the external surface of the uterus, its external covering being the peritoneum.

The intra-mural, interstitial or parietal tumor occupies the parenchyma of the uterus.

The sub-mucous growth is located upon the internal surface of the uterus, and has for its investment simply the mucous membrane usually investing the cavity.

The fibroid tumor is termed polypoid when attached by a pedicle of varying size and length to the mucous or internal surface of the uterus.

In size they vary from the bulk of a pea to masses weighing seventy and even eighty pounds. In frequency they are perhaps more common than any other single uterine disorder.

Owing however to the fact that they are often of very innocuous character, their presence may not be made evident during the life of the individual. In very many other cases too, where they may be productive of some discomfort, their true nature is not discovered during life if at all, so that we have remaining a probably comparatively few cases whose

magnitude makes them objects of serious inconvenience, if not of fatal event to the patient, and further, those tumors which declare their presence as polypi.

They are most likely to be developed during the child-bearing age or period of uterine activity, and have been most frequently observed between the ages of thirty and forty-five. Comparatively nothing is known concerning their cause, and we are therefore without prophylactic means. The theory has been advanced that during the menstrual life of woman, at some of the periods of uterine congestion, a little thrombus or extravasation of blood may become imbedded at some point, and becoming organized serve as a nucleus ultimately for some one of the forms of fibroid tumor. This is simply a theory, unsupported so far as I am aware by any facts.

These tumors consist of unstriped muscular fibers, similar in appearance to the fibers of the uterus where they are attached, numerous shreds of filamentous structure, nucleated cells and granular matter, and their structure it may be said is essentially that of the uterus. No limit appears to exist to the multiplicity of these tumors in the same individual. A case is reported by Thomas in which no less than thirty-five were demonstrable in one uterus, and Schultze saw at least fifty in the uterus of an old woman.

Negresses have been considered especially obnoxious to these tumors, insomuch that some authors have considered that in their uteri, after the age of thirty, the presence of fibroids was the rule, their absence the exception.

Fibroid tumors are always of slow growth, and from natural laws receive greatest accessions to their size upon those portions subjected to least pressure; hence not only is their shape, which primarily appears to be globular, influenced by external pressure, but intra-mural tumors tend to develop towards the peritoneum or mucous lining of the uterus, when situated relatively nearer those membranes, and thus become sub-serous or sub-mucous. In further continuation of

the same law, these two forms tend to become pediculated, after which their serous communication becoming impaired or lessened, their growth becomes less rapid.

Sub-serous tumors. As already seen the sub-serous or sub-peritoneal tumor may in its early stages have been properly classed as intramural.

Its origin, attachment and subsequent nutrition are from the parenchyma of the uterus. It has a comparatively free cavity, the peritoneal, into which to expand, and from this we might predicate the fact that its size would probably exceed that of either of the other varieties. It is invested by the peritoneum, a characteristic which pertains even to the pediculated form, where the peritoneum is not, even though so considerably enlarged or drawn upon, thereby diseased or materially changed. Upon reflection it will be seen that its development takes place between the folds of the broad ligament enveloping the uterus, and numerous instances have been observed in which its pedicle has ultimately separated, and the tumor, its uterine connection thus severed, has been left attached to some portion of the broad ligament, or according to Simpson, free in the abdominal cavity.

Usually in such cases the further growth of the tumor is almost or entirely checked, but in some cases attachments spring up which abundantly nourish it, and it continues to increase in size. The tumor while remaining attached to the uterus may increase to considerable size, drawing upward upon the body of the organ to the extent even of separating it from the cervix, or in some other cases it may displace the organ downwards.

Usually the uterus will increase in size with the tumor, especially if the tumor be sessile or attached by a very large pedicle, but the reverse or atrophy of the uterus has been seen. It only remains to add that tumors are found in the broad ligaments, and the vicinity of the ovaries, whose origin

is not uterine, the muscular fibers occasionally found in the ovaries and their vicinity serving as a nucleus.

Interstitial, parietal or intra-mural tumors. Of all the uterine tumors these cause least discomfort or annoyance to the patient. In fact their existence may be for a long time unsuspected, and it is only when they have attained considerable size, that attention is drawn in their direction. They are included in a capsule, from which they are in some cases enucleated by natural causes alone, or by cutting through the investing uterine wall.

They are not usually as large as the sub-serous variety, and in their growth the uterus participates and becomes distorted and altered in shape, sometimes retro-verted, at others ante-verted. As already noted intra-parietal tumors have a tendency to become sub-mucous by extension inwards towards the cavity of the uterus, or sub-peritoneal by growth towards the peritoneum.

They may proceed from one or many nuclei, and where multiple, the pressure of the tumors upon each other results in a great diversity of form, both as to the individual tumors and the aggregate mass. Being usually better supplied with blood vessels than either of the other forms, they may after becoming sub-peritoneal attain an enormous size, distending the abdominal walls to an extent that occasionally terminates in hernia or gangrene, and death to the patient.

While distinctly intra-mural, the pressure of the uterine tissue probably restrains their growth, so that in size they are then smaller than the other varieties.

Sub-mucous fibroids. Where the fibroid develops upon the interior of the uterus it is termed sub-mucous or intra-uterine. The side of the cavity affected assumes a convex form, the opposite side being concave and resting upon it. Displacements of the uterus do not so often occur in this as in the sub-peritoneal variety, since the entire organ is increased in

size for its accommodation. Menstrual and other disturbances are soonest perceived and most persistently suffered from in this form of fibroid.

In all cases their tendency is to become pediculated and form fibroid polypi, a termination probably attained in a majority of cases.

Fibroid uterine polypi. These growths, as will be inferred from what is said above, originate as sub-mucous fibroids, and are sustained by a pedicle of varying thickness and length. While fibroid tumors usually originate from some part of the body of the organ, and seldom from the cervix, the natural effect of gravitation is to cause polypoid growths to descend, so that in not a few instances their attachment appears ultimately to be cervical.

This will appear often to be the case from dragging down and eversion of the os, even though the real point of attachment be the lower part of the body.

Fibroid tumors of the cervix are occasionally met with affecting either lip, which becomes thereby enlarged and more or less pendent. Where the growth is of considerable magnitude, the body of the uterus may be displaced and carried upwards or laterally away before it.

Polypi attached near the fundus descend to the cervical canal through which they sometimes pass into the vagina, where they are discovered as globular or ovoid masses, from the size of a hickory nut to that of a child's head, and in some such cases chronic inversion of the uterus has been produced by the continued dragging weight.

Terminations. Fibrous tumors may undergo a variety of changes:

1st. They may become the seat of cancerous disorganization, but it is doubtful if the structure of the uterus itself is not as frequently thus affected; hence it cannot be said

that in fibroids there exists any particular tendency to carcinoma.

2nd. Fatty degeneration occasionally occurs. Composed as they are of a structure identical with the uterus, the same tissue changes might naturally be expected. As is well known the process of involution in the normal uterus consists in a fatty degeneration of its muscular structure.

In similar manner the fatty degeneration of a fibroid is followed by a decrease in its size, and in some few cases by its complete disappearance.

3rd. Inflammatory changes may be set up, the tumor becomes soft, elastic and gangrenous, and the patient sinks from empyema, or after a precarious struggle for existence slowly recovers. This change is especially liable to follow parturition, and where occurring in an undiscovered fibroid may lead to a fatal issue or a lingering recovery, for which the practitioner may find it difficult in his own mind to assign a satisfactory cause.

4th. The growth of these tumors is in very many cases arrested. Especially is this the case after pediculation takes place in the sub-serous variety; after the menopause and consequent cessation of uterine activity, the same result often follows with the intra-mural form.

5th. The tumor becoming a source of irritation, inflammatory action may cause a weakening and ultimately even a sloughing of the muscular parietes of uterus imprisoning it, and what has very properly been termed *spontaneous enucleation* may take place, resulting in the expulsion of the tumor.

Numerous instances have from time to time been observed, in which by this process the disorganized mass has by uterine contractions been forced to a point where it could be seized and removed, if indeed it were not spontaneously expelled. In this connection it is proper to consider that

the tumor is itself an irritating body, by its compression upon the surrounding structure of the uterus, inviting such a termination, which a slight cause may perhaps determine.

6th. A deposition of calcareous matter in some cases takes place, and the further increase in size being stayed, the tumor is reproduced as a calcareous nodule, of such density even as in some cases to be capable of receiving a polish. In this event it may be carried for years without fatal if even serious inconvenience, or by spontaneous enucleation it may be discharged from the uterine cavity, constituting what has been termed a *womb stone* or *uterine calculus*. Cases have been reported in which perforation of the bladder by these bodies has taken place, and even the peritoneal cavity has been invaded with fatal results.

Hippocrates observed a case of the kind; Schrœder reports a case from Saxinger, in which the forceps were applied to a stone of the size of a child's head, which was thus removed; a stone of fifty pounds weight is mentioned in the Medico-Chirurgical Transactions, XXIII, 1840; and many other similar instances are to be found mentioned in the literature of the subject. This termination is most common in women past the menopause, and the concurrent arrest of growth is probably the first step towards calcification.

Prognosis. So far as danger to life is concerned our prognosis cannot be very unfavorable. When the frequency of fibroids is considered, and the rarity of fatal sequences, it must be apparent that while often annoying they are seldom fatal.

Death may however occur in a variety of ways. The excessive size of a sub-serous fibroid may so encroach upon the abdominal viscera as to produce herniæ, and even sloughing of parts pressed against may be followed by death from empyema or prostration. Sub-mucous fibroids and polypi

may produce excessive, debilitating and even finally fatal hemorrhages.

The intra-mural form of fibroid may take on inflammation, especially in the parturient uterus; disintegration of its tissue with suppuration may follow, to terminate in a lingering recovery or in death.

Usually, however, they are all of slow growth; they exist for years, and their encroachments upon neighboring organs are so gradual as to create little disturbance, and the menopause frequently brings about an arrest of growth or even entire subsidence and disappearance. Upon the other hand they may be of rapid growth and lead directly or indirectly to a fatal issue.

Diagnosis. Fibroid tumors of the uterus may be confounded with and require differentiation from,

1st. Hypertrophy of the uterus.
2nd. Anteflexion or retroflexion.
3rd. Ovarian tumors.
4th. Pelvic exudations.
5th. Hematocele.
6th. Omental tumors.
7th. Pregnancy.
8th. Impacted feces.
9th. Internal cancer of the uterus.

In the diagnosis from *hypertrophy of the uterus*, it is only necessary to remember that bi-manual examination shows the hypertrophied uterus to be regular and nearly normal in shape, while a single fibroid tumor will pervert the natural shape, and if several be present an irregular or knobby outline will be produced.

Into the hypertrophied uterus the sound passes freely to a depth of three and a half or four and a half inches perhaps, but by reason of the concavo-convex shape imparted to the uterus or its cavity by intra-mural fibroids, and the

irregularity caused by multiple tumors, the sound passes with difficulty, and furthermore the depth of the uterus is not increased proportionally with its size. The same prominence of the body of the uterus in the anterior or posterior cul-de-sac, may be felt with fibroid tumors of the anterior or posterior wall of the uterus that is present in *ante-* or *retro-flexion*, but the introduction of the sound will disclose the fact that the cavity of the uterus is not changed in its direction to correspond, and thus the differentiation will be easily made.

It may be extremely difficult to differentiate between fibroids and some of the forms of *ovarian tumor*. We shall usually observe, however, that an ovarian tumor may be moved to some extent without affecting the uterus. Usually, too, ovarian tumors are softer and more elastic; their growth is much more rapid, and profuse menorrhagia is not present. Nevertheless ovarian tumors may be solid and attached to the uterus, and fibroid tumors may be soft or cystic; but we have still the symptoms of menorrhagia present in interstitial and polypoid tumors, leucorrheal discharges and a greater amount of pain present in fibroid tumors to serve as a means of diagnosis.

It has been recommended to use the aspirator or an exploring needle in cases of still doubtful or difficult diagnosis; but the information thus obtainable, while furnishing presumptive evidence, would prove possibly fallacious, if the growth should be uterine and cystic, or ovarian and solid.

Following pelvic cellulitis, and other inflammations of the pelvic contents, we may have *exudations*, which will interfere with diagnosis. By these exudations the uterus is usually rendered more or less immovable, while fibroids, unless of great size, do not interfere with uterine mobility. The history of the case will point to previous pelvic inflammation, and inferentially therefore to exudation.

Hematocele occurs suddenly; the constitutional symp-

toms accompanying are more or less violent, great prostration being often present; and a painful, tender, immovable and at first fluctuating tumor is felt. It would therefore be unnecessary, with a knowledge of these facts, to mistake a hematocele for a fibroid tumor.

Omental tumors do not present signs of derangement in the action of the uterus; they do not descend below the brim of the pelvis, and can seldom be felt *per vaginam.*

The uniform enlargement of *the pregnant uterus*, the almost invariable cessation of menstruation, the rapid changes which take place, all differ from what may be expected with fibroid tumors. It should however be remembered that morning sickness may be present with polypus, also the "placental souffle;" and it may hardly seem necessary to add the caution, never to use the uterine sound as a means of diagnosis until the probability of pregnancy has been eliminated from the case.

Impaction of feces is usually attended by constipation but not invariably, as the difficulty is by no means inconsistent with very free movements of the bowels. It will be discriminated from any uterine tumor by observing,

1st. Its location, this being usually at the commencement of the ascending colon in the right hypogastric or inguinal region, or at or near the sigmoid flexure of the colon.

2nd. Its doughy feel, and the fact that it may be indented.

3rd. The intestinal pain and local disturbance caused by such impactions.

4th. That movements of the uterus are not participated in by the tumor.

Internal cancer of the uterus is an extremely rare disease, but presents many symptoms in common with sub-mucous

fibroids. The course of cancer is presumably more rapid, and a constitutional cachexia common to malignant diseases soon supervenes. If the site of the affection be low enough to be reached, the hardness of the surrounding uterine tissue will also afford some clue to the true nature of the difficulty. Fibroid polypi in the vagina, or exteriorly, may be known from an inverted uterus by absence of sensibility.

Treatment. This must necessarily vary with the symptoms present, or in other words with the condition of the patient. Treatment may be said to be either palliative or curative, and it is for the practitioner to decide first of all which course he had better pursue. The chief sources of danger are the persistent menorrhagia present, and the troubles incident to the pressure of a large growth upon the circumjacent viscera.

The discovery of the mere presence of a uterine fibroid constitutes in no respect a demand for treatment, unless coupled with symptoms of gravity or a rapidity of growth, which renders it probable that grave symptoms are in store in the near future. We may divide our resources into two classes, *medical* and *surgical.*

By *medical* treatment is meant the administration of such remedies as seem likely to bring about absorption, produce fatty degeneration, or at least arrest the development of the tumor. Unfortunately our resources in this direction, while many, are too often futile.

Occupying a prominent place among internal remedies are the various preparations of iodine and bromine, also calcic chloride. The waters of alterative mineral springs, as Kreuznach, Carlsbad and Kissengen, have been extensively recommended and used, but as these must forever remain inaccessible to the very large majority of our patients, it is of interest to consider the question of efficient substitutes.

Sir J. Y. Simpson was especially favorable to the use of the bromide of potassium, it being in his belief the effective

remedy in the mineral waters highest in repute, and furthermore being tolerated by the system better and longer than the iodide. He recommended it in doses of five grains three times a day, and if it seemed in any way to disagree with the patient, its use was occasionally intermitted for a week and its place supplied with an acid tonic. Whatever means may be used especial care must be taken not to deteriorate the health of the patient, as all foreign and neoplastic growths flourish best upon debilitated or enfeebled patients.

The use of phosphorus has been recommended with a view of favoring fatty degeneration, and externally the tincture of iodine or ointments containing the potassic iodide have been applied. The syrup of the hypophosphites, and the iodo-bromide of calcium, are also remedies of the class most likely to prove beneficial.

The use of any of these curative or palliative measures, should be persisted in for a long time, if any good result is expected; and it is still a matter of doubt whether we can in this way accomplish anything definite.

Usually experience shows nothing tangible is effected; occasionally a recovery takes place during the treatment, and sanguine observers are led to believe the treatment has been effectual, when softening, fatty degeneration and absorption, as has heretofore been observed, frequently take place spontaneously, or owing to the menopause or other unknown causes.

It remains to speak of ergot, which has of late years been used in the form of the hypodermic injection of ergotin. The injection of ergot in whatever form, is very apt to be followed by painful indurated nodes and even abscesses, at the point of its insertion, to obviate which various formulæ have been devised.

Hildebrandt who has experimented quite extensively recommended the following formula:

℞ Ext. ergot. aqueos., grs. xlvj.
Glycerinæ,
Aq. destillat., aa, ʒij.
M.

Of this preparation from five to fifteen minims may be injected according to the effect.

Wernich, according to Schrœder, obtained a pure and very effective preparation, which caused scarcely any pain and was rapidly absorbed, by taking powdered ergot, after it had been freed from fatty matters and those soluble in alcohol, extracting it with water and then cleansing it from its mucilage and other impurities by filtering.

While several cases of supposed benefit following this treatment have been from time to time reported in the medical journals, it still remains to be proven whether the remedy is of especial value.

We may be frequently called upon to palliate the distressing symptoms accompanying these tumors, where we are obliged to confess our inability to treat them more radically. The principal symptoms that we shall thus be called upon to counteract are:

1st. Those that arise from the size and pressure of the mass upon the surrounding viscera.

2nd. The exhausting hemorrhage usually present.

To relieve the pressure present, in all cases, is impossible, but we are able to palliate in many instances. Where the growth is yet small, it may by producing a condition analogous to, if not identical with version or flexion of the uterus, produce the same general distress which attends those difficulties. The same general treatment is here applicable that would be found beneficial in uncomplicated flexions or versions, viz., to so far as possible restore the uterus to a normal position and by suitable pessaries or supporters retain it there.

Again, the size of the tumor may have increased to a point no longer compatible with its retention in the pelvis, from which however it fails to emerge by rising up as does the pregnant uterus. Pressure upon the rectum causing obstinate, mechanical constipation and distress, and upon the bladder causing frequent and painful micturition, are among the symptoms which will now present.

This may sometimes be relieved, having first placed the patient in the "knee elbow position," by introducing one or two fingers within the vagina and making steady pressure upwards upon the tumor, until it rises above the brim of the pelvis. The subsequent maintenance of the recumbent position for two or three days will often learn the tumor to accommodate itself to its new location, to the great relief of our patient.

For the relief of another class of cases in which the tumor already in the abdominal cavity, by its bulk oppresses the patient, or by its mobility gliding from side to side with each motion of the body, thus maintains a constant irritation, we are only able to apply such external or abdominal support as seems best fitted to the circumstances of the case.

A variety of means are at our disposal for the relief of the prostrating hemorrhage, among which may be mentioned the administration of gallic acid in doses of five to ten grains, repeated if need be every two or three hours.

The oils of erigeron and erechthites, while serviceable, often disagree with the stomach and are then inapplicable, but if not thus contra-indicated they may be administered in five drop doses every hour or two. A strong infusion of cinnamon bark, in tablespoonful doses taken cold, may sometimes prove beneficial. Ergot has been recommended, but although I have often used and seen it used, I have failed to perceive any very beneficial results. The tincture of cannabis indica, in doses of ten to fifteen drops every three or

four hours, has acquired a good reputation, while opium is used and advocated by others. As a means of controlling uterine hemorrhages, accompanied by atony of the mucous membrane of the uterus, and especially applicable to the condition in question, I have never met with a remedy or combination as effectual as the following:

℞ Pulv. alumen., ʒj.
Pulv. kino, ʒss.
Ft. chart. no. vj.
M.
Sig. Take one powder every one to three hours.

The limit in the frequency with which these powders may be administered is only measured by the tolerance of the stomach. Usually the first indication that the limit is reached will be a feeling of giddiness, or possibly fulness or pain over the eyes. Should any of these symptoms appear, the remedy should be discontinued for a time or administered at greater intervals.

With whatsoever remedies we may use, the assistance of quiet in the recumbent posture, the tampon, and in some cases the application of cold, with cooling acid drinks should not be forgotten. As a means of arresting hemorrhage, the sponge tent possesses in some cases some advantages over and above the tampon. It is rather more direct, and by blocking the cervical canal as effectually prevents the escape of blood, besides, a troublesome hemorrhage is frequently induced by very small polypi, which by contact with the tent and constant irritation become disorganized or destroyed.

The scarification or incision of the os uteri has been recommended by some gynæcologists as an efficient remedy for the control of hemorrhage. A better plan consists in the division of the mucous membrane overlaying the fibroid, by

means of a suitable bistoury or even a thorough scraping by means of a curette, Figs. 36 and 37.

Fig. 36. Siemon's curette.

Fig. 37. Sims' curette.

If an incision be made no fear need be felt at extending it deep enough to considerably involve the tumor, the slight vascularity of which will not materially add to the hemorrhage. The relief of the congested mucous membrane is thus obtained, its blood-vessels contract or become plugged, and thus for a time the hemorrhage is very much lessened.

To the cavity of the uterus various astringents have been applied, principally the styptic salts of iron; and it is better to apply these preparations with a brush than by means of injection.

The canal of the cervix having been previously dilated, the tincture and compound tincture of iodine have been injected into the uterine cavity.

By all possible means the congestion of the uterine mucous membrane should be relieved during the inter-menstrual periods. Hip baths and vaginal injections of cool or tepid water may usually be used daily with advantage, also the administration of tincture or fluid extract of viburnum prunifolium, or the vin. symphyt. comp.

Surgical Treatment. The circumstances demanding direct treatment are, severity and magnitude of symptoms threatening the life of the patient; or a favorable combination of circumstances, such as an open or dilated cervix; a low attachment of the tumor whence its easy accessibility; a capacious vagina, and for interstitial tumors the probability that their outer or peritoneal side is still covered by a con-

siderable amount of uterine tissue, which would be evidenced by no very marked bulging or protrusion appearing upon the outside of the uterus. Under these circumstances, the operation of removing these tumors by way of the vagina may be resorted to.

Where the tumor is of the sub-mucous variety, and has so far tended to pediculation that its point of attachment is smaller than its body, and where its point of attachment is low down, it may be a fit subject for removal by the operations of excision or écrasement. As a first step a dilation of the os and cervix uteri must be secured, either by dilatation with tents or by incision, but not by both combined, as after incision it is unsafe to resort to dilatation. The tumor is then seized with suitable forceps and drawn down, while with the finger its attachment is sought. Its pedicle may now be divided with scissors curved on the flat. Should the hemorrhage be considerable the stump may be painted with a solution of the perchloride of iron in glycerine, with which the tampon may be combined, usually the tampon alone being sufficient.

A better plan still is to make use of the steel wire or rope écraseur, Fig. 38, the wire of which being looped

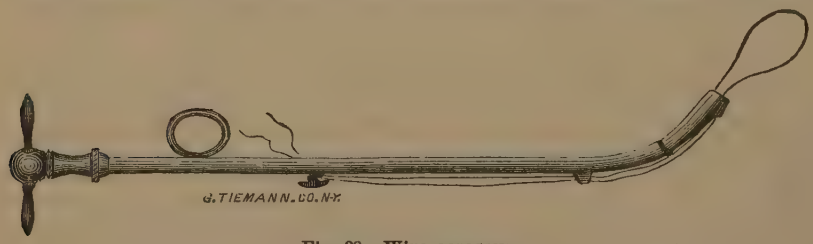


Fig. 38. Wire ecraseur.

around the neck of the tumor is slowly tightened until the mass is cut through. It is proper here to observe that iron wire lacks the requisite strength and no attempt should be made to use it, and it will be but prudent for the operator to be provided with an extra steel wire for use in case of breakage of the first.

Owing to the difficulty often experienced in encircling the pedicle with the wire or rope, and the still greater difficulty if not impossibility of passing the chain of the Chassaignac écraseur to the proper position, Dr. Sims made an addition to the latter instrument consisting of two dilating spring blades, which distend the loop of chain until it is placed in position, when they may be withdrawn leaving the chain free to work. The instrument as thus modified is represented in Fig. 39.

Fig, 39. Sims' porte chain ecraseur.

Should it be found impossible to operate upon the tumor by this means, the more hazardous expedient of enucleation may be resorted to. The fact already mentioned, that these tumors are encapsuled, has led to the idea of splitting open their mucous and submucous covering, and by means of the fingers, a scalpel handle or some similar blunt instrument, gradually elevating them from their bed.

As in the preceding operation the first step is to obtain suitable dilatation of the os and cervix. If the cervix be obliterated, this may be secured by incisions, otherwise it is better to resort to tents. The tumor should now be seized with forceps, and an incision of sufficient length be made, which if necessary may be traversed by a cross incision. During the process of enucleation, efficient assistance is rendered by the forceps drawing the tumor from its capsule. Usually its points of serous attachment are but few and easily broken down.

So hazardous is the operation in the case of interstitial fibroids, that it should only be undertaken when rendered imperatively necessary, and should be especially avoided

where evidence exists that the tumor extends nearly or entirely through to the peritoneum. Hemorrhage, inflammation and empyema are very likely to lead to a fatal termination in these cases.

A modification of this operation recommended by Dr. Atlee and I. Baker Brown, consists in the induction of sloughing by "gouging" out a deep hole into the substance of the tumor, in which is to be placed a pledget of lint steeped in sweet oil. The dangers of empyema are combated, but by no means annihilated by the injection of antiseptic washes and strict cleanliness. The treatment depends largely for its success upon the fact that these tumors are very intolerant of injury, and that the removal or destruction of any considerable portion of one of them, is soon followed by the sloughing or absorption of the remainder.

A modified process of enucleation is the division of the capsule by one or more free incisions, after which it is left to Nature, or in some cases ergot is administered with a view to excite uterine contraction, resulting in enucleation.

A class of fibroids, not amenable to either of the plans heretofore mentioned, is found in those large tumors of the size of a child's head or larger, so large in some cases as to forbid their passage through the superior strait. Not only does their size prevent reaching the pedicle, but were this divided it would be impossible to remove the mass entire.

In such cases the wire or chain of an écraseur may be made to encircle as large a mass as convenient, which being cut through and removed, a succeeding portion is removed, either at once or after a few days' waiting has caused it to descend lower.

Gastrotomy or Laparotomy. Laparotomy, from *lapara*, "the flank" or "loins," is a term, with gastrotomy applied to the operation of incising the abdominal walls for the removal of sub-peritoneal fibroids. No other form of surgical

interference is applicable to this class of tumors, and it is fortunate that the symptoms produced are seldom of so severe a character as to demand this measure. If the tumor be attached by a long and slim pedicle, the chances for safety in the operation are at their greatest, and may be compared in some measure with the dangers attendant upon ovariotomy.

On the other hand it is to be considered that such growths are of very slow and usually limited growth, and that those demanding interference are attached to the uterus by a broad base affording them numerous and active serous attachments. In such cases the extensive dissection from the uterus, or even the extirpation of the uterus and some of its appendages, which may be made necessary, renders the operation the most formidable perhaps in the domain of surgery. It cannot be said indeed that the medical profession has as yet fully indorsed the operation as justifiable, more as it seems to me from timidity than from solid reasoning.

Premising what by all is accepted, that the operation is only to be resorted to in those cases otherwise hopeless, and admitting that present statistics exhibit a ratio of only twenty-five per cent. of recoveries, it appears to me evident that the fourth patient, who survives, owes her life directly to the operation. And even admitting still further, that where in the operation the removal of the uterus becomes necessary the fatality is very much greater, we must in justice consider that year by year our ability to combat the danger of these operations increases.

Ovariotomy was not long since considered a reckless and unjustifiable operation; now I know not that any condemn it.

But in stating the case as above I have given probably a too high estimate of the danger as exhibited at present. According to late statistics, the operation when complicated

with removal of the uterus has given a percentage of 24.66 recoveries; without removal of uterus 34.30 per cent. recovered (Schrœder). By the same author is given an account of cases in which the operation has been abandoned, showing 64.29 per cent. of recoveries, which can only mean of course a recovery to the condition existing prior to the attempted operation. To this I am able to add a case in which Prof. Milton Jay by incision exposed an immense fibroid, whose removal he was obliged to abandon. From the operation the patient recovered, to die some months subsequently from the inevitable progress of the disease.

But statistics as usually collected show the bright side, from the disposition to report successes rather than failures, and it is but just to quote upon extirpation of the uterus the statistics given by Thomas, which summed up give in eleven cases ten deaths, or a percentage of recoveries of 9.09 nearly.

At present it may be said that medical opinion inclines to indorse the removal of fibroids, where pediculated or not attached by a too broad base, and probably the abandonment of the operation where removal necessitates removal of the uterus. It is not however an easy matter nor even a possibility for the most skillful and experienced in all cases to determine the exact character and nature of these growths; a full diagnosis being often only with patient difficulty made after their removal, when it has sometimes been found that a supposed ovarian tumor was really uterine.

The operation should not be undertaken without the necessary preparations for removal of the uterus, if upon exposure it be deemed advisable. The dangers may be considered as,

1st. Shock.
2nd. Hemorrhage.
3rd. Inflammation.
4th. Pyæmia.

Shock is to be averted by securing the best possible general condition, and the administration of stimulants previous to the operation; *hemorrhage* by all the general means recommended in ovariotomy and at the command of the operator; *inflammation*, by the careful and gentle removal of all blood and foreign substances from the peritoneal cavity previous to closing the wound, and by such subsequent general treatment as the circumstances indicate; and *pyæmia* by the same means usually recommended in such cases.

For the operation an incision is made in the median line of such length as in the judgment of the operator seems to be indicated by the circumstances. The mass being exposed it is lessened by tapping and the removal of the serous contents of any cysts that may be discovered, when it is drawn through the opening, and its pedicle or attachments are to be secured and divided upon the same principles that govern the removal of ovarian tumors, for a consideration of which reference is made to the article upon ovariotomy.

Recurrent fibroid tumors. Under this heading Hewitt speaks of a very rare form of fibroid tumor growing from the interior surface of the uterus, whose tendency is to return after removal. In its manner of growth, general appearance and symptoms it resembles ordinary fibroid polypus. It is in structure soft, lobulated, fibrillated, and hence easily torn and of difficult removal.

By it are produced extensive hemorrhages and offensive discharges, and upon its removal it is distinguished by persistent recurrence. Except in its malignancy it presents no resemblance to cancer, and no treatment has thus far proved effectual, the patient ultimately succumbing to the induced prostration.

FIBROID POLYPUS.

The course of sub-mucous fibroids to the development of polypoid form has already been fully considered, and little more need be said in the consideration of this subject. Polypi being considered as simply pediculated sub-mucous fibroids, it will be readily seen that their removal will be simpler and safer in proportion to the length and tenuity of the pedicle.

In its simplest form the polypus hangs in the vagina, attached to the lower portion of the uterine cavity, which by the weight of the polypus may be everted so as to expose its attachment; or more fortunately still its attachment may be to the cervical canal or the anterior or posterior lip. Its pedicle may be smaller than a pipe-stem, and may be snipped off with scissors or cut off with a knife, with or without previous ligation. The hemorrhage is insignificant, and the subsequent traumatic effect upon the patient is less than that produced by the extraction of a tooth, which is really an operation demanding as much or more skill.

In proportion however as the attachment is higher and the pedicle larger, the difficulties and dangers rapidly increase. Where the attachment is at the fundus and the pedicle short and broad, the effects upon the patient, such as hemorrhage and profuse discharges, as well as the troubles and dangers incident upon removal, are at their maximum.

Symptoms. At first the appearance of profuse menstruation, soon followed by inter-menstrual hemorrhages and a blenorrheal discharge. Occasionally the constitutional symptoms of early pregnancy come on; the breasts become enlarged; milk may be secreted; the areola darkened; and derangements of digestion, and morning sickness are not uncommon. The uterus slowly enlarges, and after a varying length of time, from months to two or three years, the fundus may be felt rising above the pubic symphysis.

The pendent tumor by pressure dilates the internal os,

obliterates the cervix, and as the growth increases it may be felt through the gradually opening external os. Or descending still lower it occupies the vagina, where it may continue to increase in size until the true pelvis is completely blocked by it, producing a sensation of dragging and weight in the pelvis; and by pressure upon the base of the bladder, the urethra and rectum, difficulty in the passage of urine and feces, or passing the sphincter vaginæ the protruding tumor may bring with it the fundus uteri, producing inversion of that organ.

Usually however before this stage has arrived, the prostrating effects of hemorrhage will demand its removal. If not removed, death may result from emaciation and debility, but seldom from direct hemorrhage; or adhesions may form between the walls of the vagina and the tumor, limiting to some extent the hemorrhage; or disorganization of the polypus may result in its spontaneous discharge, with recovery of the patient or death from septicæmia.

Diagnosis. In its earlier stages diagnosis may be difficult or impossible; later the vaginal touch aided by the uterine sound, and if need be the speculum, will render the diagnosis certain.

Prognosis. Usually favorable.

Treatment. Fibroid polypi should be removed, and upon the propriety of this step there is but one consideration. Unless the general symptoms are severe, the hemorrhage persistent and debilitating, removal should be deferred until such time as the natural dilatation of the os has made the growth accessible. In some few extreme cases however it may be necessary to interfere by mechanical dilation for their immediate removal.

Removal may be accomplished,

1st. By ligation.

2nd. By excision.

3rd. By torsion.

4th. By écrasement.

Ligation is performed most conveniently with Gooch's double canula, by means of which a stout silk thread, waxed hemp cord or a silver wire is made to encircle the pedicle. The cord then being tightened, strangulation takes place, and the polypus rapidly sloughs away and is discharged. The objection to this plan of treatment is the risk of pyæmia consequent upon the retention of a mass of suppurating tissue in the uterine cavity. Cleanliness and subsequent antiseptic injections are the means by which this condition is to be avoided. When practicable it is advisable to adopt one of the other modes of treatment.

Fig. 40. Aveling's polyptome.

Excision may be performed where the pedicle is small and easily accessible, using either knife or scissors, and previously ligating the pedicle or not, as circumstances may indicate. Aveling's polyptome, Fig. 40, is an instrument designed for use in cutting the pedicle of these growths, but while frequently convenient it is by no means an indispensable instrument. The galvano-cautery may, if the apparatus be at hand, be often used with convenience and good effect. A loop of platinum wire being made to encircle the pedicle, is brought to the requisite heat by the transmission through it of a powerful galvanic current, and the structure is thus divided rapidly and with comparatively no hemorrhage. Where excision is adopted the hemorrhage may be controlled by the application of the persulphate or perchloride of iron, or the cautery, with if necessary the tampon.

Frequently where the circumstances favor, the tumor being of easy access and the pedicle small, *torsion* may be conveniently employed. The polypus is

seized with a strong pair of forceps and the pedicle twisted until it parts.

Ecrasement may be performed with the chain, but preferably the steel wire or rope écraseur, in the same manner and subject to the same conditions as mentioned under the head of the treatment of sub-mucous fibroids. Should the mass be too large for removal entire, it may be divided and removed at one sitting or more, according to circumstances.

No especial subsequent treatment is demanded, the patient being kept quiet until danger of inflammation is past, and the special indications as they may arise being met upon general principles.

It should not be forgotten that the removal of any considerable portion of one of these growths is usually followed by the absorption or disintegration of the remainder; hence it is not of the greatest importance that the pedicle should be divided near the uterine attachment.

Channel or glandular polypus. A soft vascular growth consisting of a hypertrophied condition of the mucous membrane of the uterus has occasionally been met with. From the numerous enlarged glands traversing it, it has received the name of channel polypus.

A hypertrophy of the mucous glands of the cervix has given rise to a small polypus known as the *mucous polypus*, and which usually is found in the vaginal cavity attached to its point of origin by a long slender pedicle. Quite serious hemorrhage, and in some cases dysmenorrhea have been known to follow these small growths, which are amenable to the same treatment as the more common fibroid.

Where these growths occupy the cervical canal or the lower portion of the cavity of the body, the introduction of a sponge or sea-tangle tent, by the pressure it exerts, will frequently destroy them.

CHAPTER XIV.

CANCER OF THE UTERUS.

Concerning no subject in medicine is there a greater degree of obscurity and diversity of opinion than that of carcinoma, and the careful student of the subject is apt to feel that much that has already been said has been at random, and has but added to the already existing confusion.

The term cancer, has for a long time, been applied to certain malignant tumors presenting certain features in common, yet differing considerably, which has led to their description by a variety of adjectives as *scirrhous*, *colloid*, *encephaloid*, *telangiectatic*, *sarcomatous*, *epithelial* and some others. All these varieties present certain features in common which are often expressed in the word "malignant," to distinguish them from polypoid and other growths which are classed as "benign."

By malignancy is meant:

1st. A disposition they have to encroach upon and destroy contiguous structures.

2nd. A propensity to recur after ablation or destruction by caustics.

3rd. An ultimately constitutional cachexia.

Pathologically, it is stated by Rindfleisch that, "The greater number by far of carcinomas proceed primarily either from the epithelial clad surfaces of the body, from the skin and mucous membranes or from the secerning glands. They depend upon an abnormal growth of the epithelial tissue."

If we accept this view, it will appear probable that carcinomas are primarily local, and only ultimately become

constitutional, a conclusion justified by all the observations I have made during the past fifteen years, as well as the views of many whose observation has been of an extended character. As to the microscopic characteristics of cancer, a variety of views has been entertained, some declaring their complete skepticism in microscopic examination as a means of diagnosis, others their unbounded confidence in this mode of investigation.

Undoubtedly the microscope is a very valuable and trustworthy aid in diagnosis, and the one chief reason of distrust of its revelations arises from the fact that too much has been expected of it. The truth is that no particular or separate shape or formation of cell is distinctive of cancer, any more than one single cell is distinctive of an oak tree; but by a knowledge of the peculiarities of malignant growths, when observed in aggregation, the microscopist is able to decide upon the character of the specimen under observation with almost unerring certainty.

As heretofore stated, most cancers are of epithelial origin, and may be said to consist of an ingrowing of epithelium into the subjacent structures, resulting in a forcible separation of their fibers with ultimate thinning out or destruction. Ovoid spaces or nests are thus formed separated from each other by trabeculæ, formed of the proper tissue of the part, which spaces are filled with free cells containing one or more nuclei. And in fact in the examination of a specimen, the absence of homogeneity of structure and the presence of a great diversity of form and size of the cells present, without specifying any distinctive form, is enough to render its malignant character extremely probable. So long as the affection is epithelial in character it may be usually said to be localized, and from the greater mildness of its manifestations and its superior tractability in treatment, it has been termed *cancroid* (cancer like); but true carcinoma or cancer may at any time follow from the extension of the foreign

growth to the deeper or underlying structures, following which we have the supervention of constitutional derangements, including the metastatic formation of cancerous deposits in other portions of the body.

As the lymphatic glands are especially liable to these secondary attacks, it seems probable that the distribution of cancer cells takes place through the lymphatic ducts rather than the blood, a conclusion especially supported by the fact that the lymphatic glands, in contiguity or nearest a cancer, are the first to become affected.

Frequency. Cancer of the uterus is quite common, constituting, it has been estimated, thirteen per cent. of all uterine affections. Judging from my own experience, this estimate is too high. The period of life immediately preceding and succeeding the menopause, ranging from forty to fifty years of age, furnishes the largest percentage of attacks; yet cancer has often been observed in females below the age of twenty years.

The uterus is more commonly affected by cancer than any other structure of the body, which in large part accounts for the much greater relative prevalence of cancer in females than in males, the proportion being three to one; of all cases of cancer occurring among females, two-thirds to three-fourths are furnished by the uterus.

Part affected. A large majority of the attacks are primarily cervical, but the body is at times affected, and the invasion may be upon the mucous membrane, or parenchyma, of either cervix or body.

Causes. The careful student of the subject will be perplexed by the most contradictory statements regarding the cause. Prof. Thomas believes that "it probably arises from a constitutional vice, and is not a result of chronic inflammation or any other purely local condition." If this be so, our treatment should be largely constitutional, and not, as

usually recommended, almost purely surgical. Mr. Moore, upon "Antecedent Conditions of Cancer," believes that cancer is not dependent upon any pre-existing malady, and that the existence of any such antecedent malady is but a conjecture.

The analysis of Dr. Lever's cases, as stated by Jones and Sieveking, shows that the ratio of cancer in celibates, married and widows is respectively 5.83, 8.66 and 7.50, just identical with the relative frequency of other uterine affections in the respective classes named. Prostitutes have never been found especially liable to uterine cancer; hence an argument that abuses in coition are without causative effect.

Scanzoni was of the opinion that sterility constituted a predisposition; Dr. West thought single women and those who had never borne children least liable; but if there is a general point of agreement it is upon this, that women having borne many children are especially liable. For my own part I have seen but one case of cancer of the uterus in a nulliparous woman. While statistics show that married women and widows furnish a considerably greater proportion of cancer cases than single women, I am without the necessary correlative statistics as to the relative number of single and married women, a ratio all important in forming a conclusion to which some writers have arrived that sexual intercourse is an important factor. The fact above stated that prostitutes were not especially liable to cancer would, to my mind, exclude the sexual intercourse theory, barred only by the fact that such women are not usually long lived, and may be said in greater proportion to die before the prolific season (forty to fifty) arrives; and perhaps we may say that no reliable causes are known, save perhaps parturition.

Heredity. Probably at the present time the popular be-

lief is that cancer is hereditary, and this too even among physicians. Statistics however do not point to such a fact, no more than three per cent. of cases being traceable to hereditary origin. We may therefore say that it is rarely transmissible in this way.

So far as at present known cancer is an accidental disease, to whose attacks all are liable, without regard to previous habits, state of health, hereditary surroundings or constitutional taint. Negresses are less frequently its subjects, and certain ages increase the liability to attack; beyond this all is conjecture. This fact should not however in the least discourage but rather stimulate the closest and most watchful investigation. That some one may in the future be able to demonstrate some more definite cause and thereby furnish prophylaxis, is not only to be hoped but is possible; and that the cause or causes have not heretofore been satisfactorily set forth seems due more to the obscurity environing the subject than to any neglect upon the part of the pathologists.

Symptoms. The primary symptoms of cancer of the uterus are so trifling and obscure as to seldom be noted. There may be some leucorrheal discharge, or a slightly increased menstrual flow; but these are symptoms so trivial that the patient does not think it necessary to consult any medical adviser.

The first most persistent symptom, the one for which the patient is first led to seek relief in medical advice, is hemorrhage. In its incipiency, owing to simple uterine congestion, the hemorrhage appears only as a menorrhagia; but as the disease progresses and the tissues of the uterus begin to break down, an inter-menstrual metrorrhagia of exhausting character comes on. With this, pains through the pelvis, often of an intermittent character, and seemingly caused by the attempt of the uterus to expel some foreign substance from its cavity, are common; yet it must be observed that pain in

the pelvis is frequently absent throughout the disease. Again, the pain may be chiefly referred to the back. Soreness of the uterus, and intolerance to the touch or to coition, are often present.

Following closely upon these symptoms come the indications of constitutional affection, expressed by emaciation and a general cachectic appearance. The complexion becomes sallow, the eyes sunken and glassy, and the countenance in its aspect of pain bears silent witness to the great internal grief which is sapping the constitution.

Physical Signs. In the early stages, before even ulcerative action has become established, the cervix uteri seems hard and knobby, and if its parenchyma be affected, somewhat enlarged. With the progress of the disease the vagina may become implicated in cancerous deposits, and from this or accompanying cellulitis, the uterus becomes fixed and immovable, a symptom of no inconsiderable diagnostic value.

With the appearance of the ulceration, the finger discovers an irregular or eroded cavity, whose epithelial surface seems sometimes to overlap an underlaying cavity. Slight pressure with the finger, or the touch of the speculum, causes hemorrhage, coloring the already grumous and fetid discharge a deeper red, and in making a specular examination obstructing for a time the view, and requiring to be frequently absorbed with some soft bits of cloth or charpie before a view of the ulcerating surface can be obtained. The fetor of the discharge keeps pace in intensity with the rapidity of destruction of uterine tissue which causes it. The neighboring viscera are attacked, and perforations of the rectum; bladder, and peritoneal cavity are not uncommon, converting the entire pelvis into a mass of disintegrating tissue; while the poor patient unless carefully attended, scrupulously cleaned and disinfected, becomes almost an object of loathing to herself and friends.

Diagnosis. It is possible to make a tolerably certain diagnosis, even before ulceration has set in, by the firm, nodular and often immovable uterus. Ichorous and watery discharges usually present with hemorrhage quite early; after the ulceration, the development of the symptoms heretofore mentioned will render diagnosis easy and certain.

If affecting the body of the uterus, through the cervical canal, dilated if need be, the cancerous masses may at times be felt with the finger, and a minute portion being removed, may be subjected to microscopical examination, if any doubt exists, for verification of the diagnosis. An enlarged uterus, irregularly nodulated, and adhering to the neighboring viscera, may positively be stated to be affected with malignant disease. It should be borne in mind that a fetid discharge, presenting the appearance of that from internal cancer, will be produced by a disintegrating and sloughing fibroid, which will not, however, impart either the hardness of feel or immobility of the uterus present in cancer.

Duration. From the first discovery usually one to two years, but upon this point authors differ, making the period in some cases longer; and one case is on record in which cancer was diagnosticated twelve and a half years before death.

Terminations. More than one half die of marasmus, one-fourth of peritonitis, one-eighth of pneumonia, after which various intercurrent diseases, in nearly equal proportions, terminate the remaining cases.

Prognosis. Unfavorable in all cases.

Treatment. This may be divided into the two divisions of *curative* and *palliative*, and which plan shall be adopted must depend entirely upon the circumstances surrounding the case. If the disease be yet cancroid or epithelial and affecting simply the cervix, or if there be no vaginal thickening, infiltration or hardening, the case is one in which curative treatment should be adopted. If, indeed, the affection

still being epithelial, is located upon the mucous membrane of the body, we may expect some good to come from curative procedures.

And finally, in deciding what course to pursue, it should be remembered that it is impossible always to determine what advance may have been made in the deep-seated tissues; to abandon the patient to die without any effort to save her is cowardly, if there should seem to be even one chance in a thousand; and these reflections should lead us to carry out all that science or human wisdom can dictate as means of preserving life. Upon the other hand, the deep-seated structures may be seriously implicated, constitutional affection may be an accomplished fact, and our only possible resource—complete extirpation of the uterus—will prove unavailing, since should the patient not die in or in consequence of the operation, a recurrence of the disease in adjacent parts is inevitable, and such cases may well be consigned to palliative treatment, and, hard as it may seem, to death. Curative treatment can only mean the removal of the cancerous growth, and is most available where the most depending part of the cervix is alone the part affected.

We may here practice—

1st. Excision with scissors or knife.

2nd. Amputation by means of the écraseur.

3rd. Division of the tissues by means of the galvano-cautery.

In amputation with knife or scissors, the uterus is seized with a strong pair of toothed forceps above the part affected,

Fig. 41. Curved scissors for amputation of the cervix uteri.

drawn down to the vulva and rapidly excised, curved scissors being preferable, since the hemorrhage is less, and the operation may be concluded before the effusion of blood em-

barrasses the operator by obscuring the parts from sight. In no case can success be hoped for unless the amputation be entirely beyond the affected and into the sound tissue.

While hemorrhage is very rarely fatal, such instances have been known; hence the means for its control should be at hand. The application of a solution of persulphate or perchloride of iron upon charpie, to be followed up with a tampon, will control the hemorrhage, it being borne in mind that the styptic, to be effectual, must be in direct apposition to the cut surface. Cauterization of the bleeding surface with a hot iron is a most effectual means of checking hemorrhage, and perhaps has this advantage, that by the consequent destruction of tissue, some nests of cancer cells that have escaped the operation may thus be caught.

The Ecraseur. Amputation with the écraseur is in some respects decidedly preferable to the use of cutting instruments. First of all, the hemorrhage is much more limited; secondly, a perhaps more important advantage is derived from the fact that the operation may be performed without forcibly displacing the uterus downward, sometimes owing to its fixity impossible, and always, according to the belief of some gynæcologists, responsible for a large measure of the shock or collapse attendant upon such operations. Be this as it may, it is but reasonable to suppose that the violent traction of the organ so far from its natural position is injurious, and should if possible be avoided. In choosing the instrument the chain should be discarded, and the steel wire or wire rope only be used, being less liable to lacerate or draw in the adjacent tissues. In the use of the écraseur it is often very difficult to prevent drawing or sliding of the loose tissue, to avoid which Simpson proposed transfixing the cervix with pins below the proposed site of amputation, which proceeding is open to the objection that it requires, first of all, a dragging down of the uterus to the vulva, a proceeding, as heretofore stated, to be avoided if possible.

The Galvano-cautery. The portion to be removed being surrounded with a platinum wire, the wire is brought to a white heat by connection with a powerful battery, and the wire drawn through the mass as rapidly as it cuts its way. The advantages of this mode of amputation are freedom from hemorrhage, and excision without dragging upon the uterus or implicating any part not encircled by the wire; its disadvantage being the care and skill requisite to secure reliable action of the battery, without which all must be a failure.

In all cases of amputation it is important to avoid wounding the peritoneum, often the cause of a fatal result. The parts being put upon the stretch, and the os uteri brought down to an accessible point, the natural relations of the parts are so altered that even the most skillful operators have made fatal mistakes.

Subsequent treatment. Whatever mode of amputation be practiced, it will seldom be found that the entire mass has been removed, and the subsequent application of caustic remedies will be necessary. Of these the sulphate and chloride of zinc, chromic acid, bromine, potassa cum calce and many others have been recommended and used. The zinc salts have been made into a paste with starch, and small pieces previously dried have been pushed into the diseased mass, exposed with a speculum, at various points. Or better still, these salts may be made into a stiff paste with pulverized hydrastis or sanguinaria. Prof. J. Y. Simpson considers the application of the sulphate of zinc, previously dried and pulverized, as one of the most manageable and effectual of remedies. Thus prepared it may be laid in powder upon the part exposed through the speculum. Chromic acid may be used in the form of a saturated solution, or as I have found very satisfactory, in the following combination:

℞. White wax,
Chromic acid, aa ℥ j.
Fir balsam, ℥ ij.

Mix the wax and balsam together, and when thoroughly incorporated and while cooling stir in the chromic acid, previously coarsely powdered. As brisk effervescence takes place when the acid meets the mixture, it should be added little by little. Bromine may be used in solution with alcohol in proportion of one-tenth to one-fifth part bromine. Schrœder considers that bromine possesses a peculiar affinity for the "cancer nests," and acts for their destruction especially. In his experience the results of its use have been relatively more satisfactory than from the use of any other caustic. Having had no personal experience with the remedy in such cases, I am unable to say more than that, judging from its effects upon diphtheritic membranes, it seems reasonable to suppose that it may prove of service in this connection. A case is recorded by Simpson in which the tincture of the chloride of iron, applied at first as a hemastatic, proved to exert a very salutary effect, ultimately causing the sloughing of the diseased mass.

Whatever caustic may be applied, the ingenuity of the practitioner must be taxed to supply the best means of localizing its effects. If an alkaline caustic be applied, pieces of cloth saturated with weak vinegar or diluted acetic acid may be made to encircle the cervix, and so to cover the application as to neutralize any portions of the caustic escaping. When, as is often the case, no real antagonist to the action of the caustic exists, pieces of cloth or charpie to absorb the surplus caustic may be packed in the vagina to the best of the ability.

Curative treatment of cancer of the body of the uterus. Hitherto the treatment recommended has been applicable only to cervical cancer. It remains to be said that cancer-

ous vegetations of the mucous membrane of the body of the uterus have been successfully scraped or gouged away by means of a curette, Figs 36 and 37, or properly shaped spoon, the operation being available also where such great destruction of the cervix has taken place that amputation can not be effected. Especially is this method applicable to the medullary and softer forms of carcinoma, and it affords a means for the rapid removal of these growths under circumstances prohibiting their removal by any other means.

Constitutional treatment. Under this head a vast number of remedies, which need not here be enumerated, have been used. Acting upon the hint afforded by the anæmic condition usually present, it has been proposed to saturate the patient with iron. In my own experience, any special alterative treatment has seemed without effect, the best general results following general tonic treatment. If we bear in mind the general proposition, that all foreign growths flourish best upon an enfeebled and debilitated constitution, the propriety of making our treatment sustaining and tonic to the highest possible degree will be evident. Hence such alteratives as the iodide of potassium, the chloride of gold and sodium and the like should not be used, but such vegetable alteratives as the corydalis, ampelopsis, euonymus, guaiacum, cistus canadensis, rumex, &c., &c., combined with the different ferruginous preparations and more decided vegetable tonics, are applicable. Beyond this it is a matter of doubt if any constitutional treatment will be beneficial. Believing as I do that the disease is primarily local, and that after it has become constitutional we are without any special antidote or remedy capable of destroying the vitality of cancer cells, I consider our only resource to consist in fortifying the system to resist the encroachments of the enemy to the best of our ability.

Palliative treatment. It has already been stated that

cancer, in its incipiency, is comparatively seldom brought to the attention of the medical practitioner; hence too often the inroads it has already made are such as to render all attempts at cure nugatory. Add to these the large proportion of failures that must inevitably follow all curative procedures, and we have a relatively large number of cases that must be submitted to palliative treatment, with a view simply of relieving their sufferings while life lasts.

To best accomplish these results will demand the fulfillment of the following indications:

1st. The alleviation of pain.
2nd. The destruction of fetor.
3rd. The arrest of hemorrhage.

For the relief of pain no remedies have been so extensively employed as opium and its derivative, morphia, and this because, so far as present knowledge has reached, there is no remedy that is their equal. In all ordinary cases, the thoughtful and conscientious physician hesitates long before commencing the administration of opium, where the necessity for its use is likely to continue for some time, knowing full well that a habit of the most imperious kind is likely to be formed. Here however no one need scruple. Life, short as it will be, crowded with pains and discomforts that know no respite day or night, will seem to the poor patient all too long, and comfort and relief being all that we can give should not be withheld. Opiates should therefore be given in accordance with the necessities of the case. Where, as occasionally happens, sickness at the stomach or wakefulness follows the use of opium or morphia, the aqueous extract of opium should be substituted. In addition, there is a long list of remedies, some of which may be substituted for opium.

Thus we may use lactucarium, the solid or fluid extracts of conium, stramonium or hyoscyamus, or often with good effect the chloral hydrate. Many of these remedies may

also be used locally or by the rectum, in form of suppository, with advantage. The vapors of chloroform and carbonic acid have been applied directly to the cancer with much relief. A very simple means will serve to apply these vapors. The apparatus necessary is a long-necked pint or quart bottle, with cork perforated for the introduction of a rubber hose three or four feet long. A wooden, metallic or gutta percha nozzle for introduction into the vagina completes the essential requirements of the instrument. Into the bottle put one ounce of bi-carbonate of soda and six drams of tartaric acid. Upon the addition of three or four ounces of water a brisk evolution of carbonic acid gas will take place, which is to be conducted through the hose to the part affected. If the influence of chloroform be desired, one or two drams may be added to the contents. The relief gained by this expedient is often very great and lasts for several hours, when it may again be applied. It possesses the advantage over all narcotics administered internally that it does not derange the system in any way. An agent which very materially relieves pain in many cases, while also to some extent destroying the fetor, is a five to ten per cent. solution of carbolic acid with water. In my own experience no remedy has done better than this, injected freely two to six or eight times a day. A strong solution of sulphite of soda is more efficacious in the destruction of the offensive odor, but lacks the anodyne effects of the carbolic acid. A weak solution of the chloride of zinc, (grs. xl, to water Oj,) also possesses marked disinfecting powers.

By the use of these and other similar washes cleanliness is also promoted—an item of no small importance.

The discharge is in some cases watery, profuse and exhausting, with a particularly offensive smell, in which event astringent injections will be found of service, the knowledge of the practitioner being ample to suggest particular remedies.

For the arrest of hemorrhage our remedies are many but not superfluous. First may be mentioned the internal administration of gallic acid, the oils of erigeron erecthites and cinnamon, tincture or fluid extract of cannabis indica, etc., etc. Locally, tannic acid and all preparations containing it, chief of which are matico and catechu with the styptic salts of iron, also alum may be suggested as available. Sponges or pieces of charpie saturated with these preparations, but especially the persulphate or the perchloride of iron in glycerine, may be pressed firmly against the bleeding fungus and retained in position by a tampon. In similar manner have been used the tincture of iodine and a solution of the nitrate of silver. If remedies are to be applied through the speculum, great care should be used in its introduction, since by its touch it is liable to break down the bleeding mass and incite fresh and even troublesome hemorrhage.

Excoriation is to be combated by emollient and soothing applications, among which the mild zinc ointment ranks high; also a few grains of subnitrate of bismuth in vaseline.

CHAPTER XV.

UTERINE DISPLACEMENTS.

Normally the uterus is loosely sustained in its situation in the pelvis by eight ligaments, and supported by the vagina. I say loosely because of the natural mobility of the organ, which is easily elevated or pushed to either side by a finger in the vagina, and by a tenaculum or toothed forceps it may with very little force be drawn down so as even to protrude at the vulvar orifice. So freely is it suspended, that with each inspiration and expiration it descends and ascends, unless specially confined, a fact always patent to the sight where Sims' speculum is used. Indeed the function in reproduction assigned to this organ would hardly be possible were its position one approaching rigidity. It is scarcely therefore a matter of wonder that displacements of the uterus are common.

The ligaments connected with this organ are the two broad, formed by a duplicature of its investing peritoneum; two round, attached near the upper part of the lateral borders of the corpus; two recto-uterine, being duplicatures of peritoneum lying between the uterus and rectum; and two vesico-uterine, consisting of folds of the peritoneum connecting the bladder and uterus.

So far as descent of the uterus in its various degrees is concerned, my own belief is that it seldom if ever occurs so long as a proper degree of tonicity or rigidity of the vagina is present; and following the idea still further to its logical conclusion, we should conclude that the vagina contributed

more to the support of the uterus than the various ligaments already mentioned.

True it may be argued with great show if not probability of truth, that relaxation of the vagina would imply and would be accompanied by a relaxed condition of the adjacent ligaments, likewise occupying the pelvis, and that therefore descent of the uterus was but an expression of flaccidity of all the pelvic appendages. My opinion is however formed more from the clinical fact, that I have never been able to cure a case of descent of the uterus without first restoring strength to the walls of the vagina, than from any theory; and whatever the principle may be worth, it underlies the whole curative treatment which I shall in these pages advocate.

The normal position of the uterus varies somewhat in different individuals as relates to the distance of the os from the vaginal orifice, but a general average will vary but little from four inches, or about the length of the index finger. Its axis very nearly corresponds with the axis of the superior strait, and its anterior face therefore looks forwards and downwards, its posterior surface backwards and upwards.

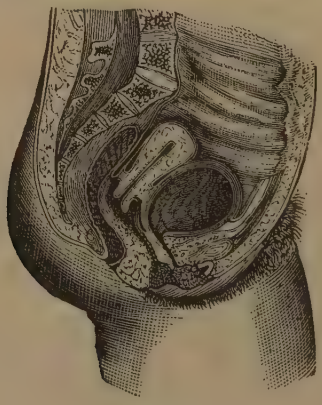


Fig. 42.

Fig. 42 represents the normal position of the uterus.

It may be said therefore that the normal condition of the

uterus is one of ante-version. The uterus never ascends except in consequence of an increase of its size, rendering further occupancy of the pelvis impossible, as in pregnancy and some uterine tumors, or it may by intimate connection with adjoining viscera be drawn up by tumors affecting those viscera, usually however in such cases being forced downwards. Ovarian tumors, when adherent to the walls of the pelvis, or some one of the cysts of polycystic tumors developing into the pelvis and becoming there adherent, may force the uterus upward and backward beyond the reach of the finger.

But it frequently descends in varying degrees, which have been variously classified and defined by different authors. It is a sufficiently exact and very convenient division of the subject to say that descent exists in three degrees.

In the first the uterus simply descends, bringing the cervix to the floor of the pelvis, the os resting upon the perineum appears further back in the pelvis than is normal, and the direction of the axis is not materially changed.

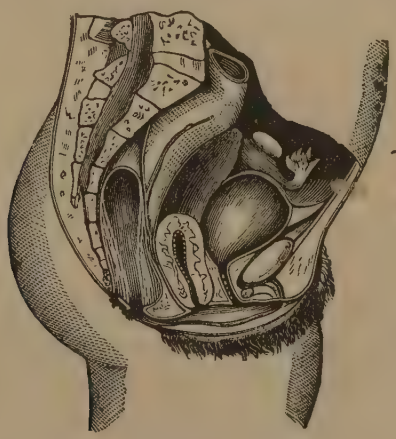


Fig. 43. Second stage of descent.

In the second degree, by the tipping backwards of the fundus and the gliding forward of the cervix, the axis changes to become nearly vertical or coincident with the axis of the body, and the cervix appears at the ostium vaginæ, through

which it is prevented from protruding by the tonicity of the parts. Fig. 43 represents the position of the uterus in the second stage of descent.

In the third degree the axis has still further changed; the anterior surface of the uterus looks forwards and upwards, the posterior downwards and backwards, and the uterus overcoming the sphincter vaginæ muscle, emerges from the pelvis, and invested by the upper portion of the vagina, is found between the thighs as a large tumor.

The English cover these three forms by the word "prolapsus;" with a view to greater precision some authors have however termed the first and second degrees "*incomplete*" and "*complete prolapsus*," and the third form "*procidentia*." Some have considered that a prolapse of the vagina, causing an eversion of its lower portion, usually precedes or accompanies prolapse of the womb, while in a few cases the uterus in its descent doubles the upper or uterine end of the vagina upon itself, being thus in its descent in the pelvis invested by two thicknesses of the vagina. In my own experience the latter form has been the most common, and prolapse of the vagina the most rare.

Predisposing causes. The child-bearing age constitutes one of the chief predispositions to descent of the uterus, no more than five per cent. of the cases occurring after the menopause. Married women are more liable to displacements than single.

Following parturition, the uterus does not return to its original size but remains permanently enlarged, constituting a predisposing cause.

The changes of relation in the pelvic viscera, incident to gestation, tend to produce a relaxed condition and thus favor descent.

A preternaturally large pelvis, especially if associated with abnormal laxity of the parts, is a predisposing cause, also enlargement of the uterus from congestion, chronic

inflammations, sub-involution, hypertrophy, tumors, early pregnancy or any other cause.

Direct causes. Violent muscular exertions, as in lifting heavy weights, jumping, running, etc., cause by their compression what may be termed a physiological descent, but when a normal condition of all the supports of the uterus is present, the organ at once returns to its proper position. When however some predisposing cause is present, these same muscular actions prove the active or direct causes of a displacement, which becomes permanent or pathological. In like manner tight lacing or the weight of heavy clothing borne upon the waist, by forcing the abdominal down upon the pelvic organs, mechanically depresses the uterus.

Tumors occupying the abdominal cavity act in a similar way.

The erect posture continuously maintained, as in walking, or occupations requiring the woman to stand upon the feet, especially if complicated with the exertion of lifting, as in ironing, washing, etc., tend to produce descent of the uterus in those subjects affected with any predisposing cause.

Usually, however, it may be said that descent is of gradual occurrence, but a comparatively few cases coming on suddenly.

Symptoms. A sensation of dragging weight in the pelvis and from the region of the umbilicus, pain in the back, frequent disposition to urinate, at times accompanied by distress or burning upon the passage of water; the rectum is often irritable, and a disposition to frequent defecation may be present, with perhaps mucous discharges from the bowels.

All these symptoms are usually aggravated by walking or standing upon the feet, and leucorrhea is commonly present. Indeed so well are the symptoms usually known and understood, that the patient herself applies for treatment for "falling of the womb," having made her own diagnosis often

correctly. A physical examination is beset with no serious difficulties, but one may be required to differentiate from polypus, cystocele, rectocele, hypertrophied cervix, and inversion of the uterus.

Diagnosis. Polypus will be known by the general shape of the pelvic tumor and the absence of the os; cystocele may be detected, if any doubt remain after digital examination, by the introduction of a catheter or sound, when the direction taken by the instrument will be abnormal and disclose the nature of the case; rectocele will be best eliminated by the introduction of a finger into the rectum, when the os uteri will be felt above and in its proper position; hypertrophied cervix is readily detected by passing the finger around it, by the impossibility of reducing the supposed prolapse, and by observing the great depth of the uterus as shown by the introduction of the sound.

Inversion of the uterus is generally preceded by a history pointing to the probability of its occurrence; if the inversion be but partial, the sound passes but for a little distance; if complete, no os uteri can be found, but only a globular tumor which may yet occupy the pelvis; or if it have passed from the vulva, its shape will be the reverse of a procidentia, being largest at the most depending portion, while procidentia presents a tumor more or less tapering towards a point at its lower extremity.

Prognosis. Descent of the uterus is productive in some cases of great inconvenience and discomfort; of itself it can scarcely be considered as ever of fatal import, but by harrassing the constitution it may indirectly contribute even to fatality.

In procidentia the uterus, exposed as the organ is, when allowed to remain without the vagina and between the thighs, to the constant irritation of the air and friction of the clothing, bruised and injured by the patient unguardedly

sitting down upon it without first having accommodated it in position, becomes excoriated and often cancerous.

The prospect for relief is good; that of cure depends upon the duration of the difficulty, the general health and condition of the patient, and the amount of care which the patient can receive, as well as the fidelity with which treatment can be prosecuted. In many cases the predisposing cause, whatever that may be, must be removed before any permanent relief can be hoped for.

Treatment. The indications are:

1st. To replace the organ.

2nd. To retain it in position.

It is not usually at all difficult to fulfill the first indication; one or two fingers introduced within the vagina easily carry the uterus upwards to its proper place, the patient being in the recumbent position.

In procidentia the uterus should be first thoroughly smeared with lard or sweet oil, then gently grasped between the palms of both hands if necessary, and gradually squeezing to reduce its size, at the same time make pressure in a direction to return it within the pelvis. Force should not be used, but persistent pressure continued for, if necessary, a quarter or half of an hour. If great swelling of the part be present, it is advisable to have the patient assume the "knee-elbow" position, the hips being well elevated and the shoulders depressed, the object being by the force of gravitation to cause the blood to leave the pelvic organs, when the procedure first recommended should be adopted. Prof. Thomas makes mention of a case in which, gangrene threatening, he administered chloroform and forcibly and rapidly reduced the uterus, while in the same connection he speaks of an irreducible prolapsus in a child three years of age which terminated in death.

To fulfill the second indication is difficult, and the means to which we resort may be classed as,

1st. General or indirect.

2nd. Local or direct.

The general means are all such as tend to promote and foster the general health of the patient, and improve the general tone of the system. All the specific measures need not here be recapitulated. I shall mention only such as might escape the mind or attention of the practitioner.

The choice of internal remedies should be such as seem to fulfill the indications present. Thus if the patient be scrofulous or syphilitic, alterative treatment, as the tinct. corydalis comp., the syrups of stillingia or aralia compound, or even sarsaparilla, with or without iodide of potash, according to indications. If anæmic, ferruginous tonics should be given. The appetite and digestion should receive attention, and the bowels and kidneys be brought to the greatest degree of healthy action possible. Locally tonic and astringent injections should be used freely from two to four or more times daily. Of these may be mentioned tannic acid and all the vegetable preparations rich in that substance, but I wish to especially call attention to the *geranium maculatum*, as combining in an eminent degree tonic and astringent properties.

An infusion of the *mangifera indica*, or better still the fluid extract with water in the proportion of one to eight or sixteen, is also an available and desirable remedy. Pinus canadensis, catechu, kino, hamamelis, infusion of quercus alba and hydrastis are all useful. Alum in saturated solution is an astringent familiar to all, and in cases of extreme relaxation will do excellent service.

The question of mechanical support is one upon which much ingenuity has been expended, often, as seems to me, with not only poor but disastrous results so far as curative success is concerned. These supports are of two classes,

those which depend for their sustaining power upon the inside of the pelvis, and those deriving their support from without.

Of the first class it may be said that no supporter can derive its support from within, without placing the walls of the vagina upon a perpetual stretch, thus preventing that structure from acquiring a normal contractility and tone. In vain are all efforts and applications to induce a healthy condition under such circumstances.

Internal supporters as a rule may palliate and relieve, and even place upon their feet patients otherwise bed-ridden, but when laid aside their beneficial effects are likely to be found evanescent; hence I cannot but consider that in all cases where a radical cure is contemplated, that we must rely upon an instrument deriving its support from without.

The requirements for such an instrument are,

1st. That it have sufficient power to support the uterus in position without an unyielding rigidity.

2nd. The material of which it is made must be so nearly incorruptible as not to be affected by the discharges, nor should there be any receptacles for their accumulation.

Fig. 44. Babcock retroversion cup.

3rd. Its support must be obtained in a manner the least of all prejudicial to the ordinary necessities of life, and all likelihood of irritation or chafing must be guarded against.

4th. Incidentally the bandage about the body should be so formed as to constitute an abdominal supporter, for by sustaining the weight of the superincumbent viscera the task of retaining the uterus in position is by so much lightened.

Some of these points are met in the Babcock supporter, an instrument at the time of its invention the best then existing. Fig. 44 is a representation of the cup used with the Babcock supporter, with a long posterior lip for cases of retroversion, the lip being left off and the cup remaining circular in ordinary cases of descent. Its support is derived by screwing the stem to the anterior face of a pad attached to the belt around the body, which at the same time performs the office of an abdominal supporter.

At the present time I more frequently make use of the McIntosh supporter than any other, believing as I do that the principle upon which it is constructed is the most rational and best. Fig. 45 is a representation of the McIntosh supporter, which consists externally of a band encircling

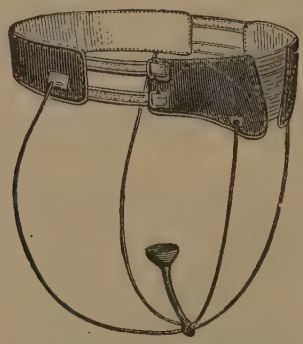


Fig. 45. McIntosh supporter.

the hips, so fashioned in front as to form an efficient abdominal supporter. To this band are attached slender rubber tubes, which support the stem carrying the cup in which, without distension of the vagina, the cervix uteri rests. The cup, Fig. 46, is made with a long anterior lip for cases of

ante-version, and a long posterior lip for retro-version, while the elasticity of the rubber tubing is sufficiently great to permit the sudden strains of coughing, sneezing, &c., &c., with all the variations in posture which the body is liable to assume, without causing any injurious or painful pressure upon the uterus.

Fig. 46. McIntosh cup.

But in merely supporting the uterus arbitrarily in position we are not doing all that is required. The cause of the descent must be discovered and removed. And we shall very frequently find this to be an enlargement of the uterus or an increase in its weight, by the presence of fibroid or other tumors. The effect of injudiciously arranged clothing is an important factor, and must be attended to. The clothing should be loose, and supported from the shoulders by straps or attachments to a properly constructed waist. If tumors are present, remove them; if congestion or hypertrophy of the womb appear to be factors in the difficulty, make use of the proper treatment for their removal.

The recumbent posture while in recent cases a valuable adjunct to treatment, in fact being often all that is required, can not be thought of as a means of treating chronic cases, to which class belong by far the larger number of cases we shall be called upon to treat, since by thus keeping our patient upon the back and depriving her of exercise, the general system will be debilitated, and local strength will not be improved.

In cases of cervical hypertrophy of the womb accompanying or causing descent, it may become necessary for relief of the condition to resort to amputation of the cervix. Of this operation Prof. Thomas says: "It must not be supposed that the mere removal of the superabundant tissue is relied upon for the diminution of uterine weight. It is rather the derivative and alterative influence set up by amputation, of which the surgeon endeavors to avail himself." The few days of enforced quiet following the operation are no doubt of service also, in restoring a measure of tonicity to the uterine supports.

The difficulties attending the operation are principally the danger of wounding the bladder in front, or incising the recto-uterine fold of peritoneum behind, and these difficulties are made greater by the fact that in cases of long standing, the continuous dragging downwards of the uterus upon the cervical vaginal attachments may produce an eversion of the cervix uteri, to an extent practically obliterating the vaginal portion of the cervix.

The introduction of a sound into the bladder will be of assistance in determining the point of vesical attachment, below which only the amputation can of course be performed. Should by any mistake the peritoneum be wounded posteriorly, the wound should be carefully closed with sutures, when it is probable no untoward result will follow.

Supra-vaginal cervical hypertrophy. Where hypertrophy of the supra-vaginal portion of the cervix occurs, an operation has been devised by Huguier, and practiced with success by himself and others. It consists in making a semicircular incision through the vaginal wall behind the cervix uteri, which incision is carried upwards along the direction of the cervical canal, to surround with a similar incision made anteriorly, the hypertrophied cervix. Great care is necessary to avoid the wounding of the reflected peritoneum be-

hind or the bladder in front, and to guard against hemorrhage, the dissection should be made with scissors.

The conical plug of uterine tissue thus surrounded is to be cut off with scissors or écraseur, and the stump covered with the adjacent mucous membrane, held in place by sutures. A very extensive removal of tissue is not considered necessary, as the alterative force brought to bear by the injury to uterine tissue, and the period of enforced rest secured, will produce a considerable absorption of uterine substance, and thus accomplish the desired object.

Elytrorraphy. Considering the value of vaginal support, the operation of narrowing the vagina has many times been resorted to, and the means used have been the application of various caustics in longitudinal and at times in circular strips, and even the induction of gonorrheal inflammation, the cicatrization following those operations being relied upon to narrow the vagina, and thus prevent the prolapse of the uterus.

The operation of *elytrorraphy* consists in the removal of a portion of the vaginal substance, and the placing and holding of the cut surfaces in apposition by means of sutures. Unfortunately, of itself, the operation fails in relieving the patient, because owing to the distensible character of the vagina, the uterus soon slips down through the narrowed canal and again appears at the vulva. It should therefore be borne in mind, that the only cases in which the operation is applicable, are those in which vaginal prolapse occurred prior to uterine prolapse, and in which the redundant tissue of the vagina makes all other treatment ineffectual. In addition to this the same means of artificial uterine support are necessary as in other and more ordinary cases.

The operation has been performed in various ways by different operators. Sims removed a strip of the mucous membrane, including two sides of a spherical triangle, and brought the freshened surface together with sutures. The apex of

the triangle was near the meatus urinarius, and its open base, which was near the uterine cervix, was closed by Emmett, owing to the liability of the uterus to descend into the pocket thus formed. Schrœder prefers the removal of the entire mucous membrane from an elliptical surface, and its approximation by alternate deep and superficial sutures. The operation is much simplified by operating while the uterus is in a state of prolapse, introducing the sutures and tightening them after replacement of the organ.

Episiorraphy. This operation consists in narrowing the vaginal outlet, or in effect extending the perineum forwards. It is suggested by the importance attached to the perineum as a support for the pelvic contents. It consists in freshening the labia majora from the posterior commissure forwards, to an extent in some cases of barely leaving an aperture near the meatus urinarius for the escape of the secretions, or if desirable, space for copulation. The freshened edges are brought together with sutures, and as a surgical operation it is easily made to succeed.

As a curative means it simply affords a floor across the vaginal outlet to prevent the escape of the uterus, which rests upon it without pretense or effort at restoration to proper position. Even this would be a comparatively desirable desideratum, but unfortunately the continuous weight of the uterus causes relaxation of the integument, and ultimately the uterus protrudes invested with the integument of the labia.

A better plan consists in a union of the two operations, which has been termed *episio-elytrorraphy*, and may be performed by denuding the integument and mucous membrane from a triangularly shaped section, whose base shall rest at the perineum, and be two, to two and a half inches across, while the apex lies an equal distance upon the posterior wall of the vagina. Brought together with alternate deep-seated and superficial sutures, a firm and substantial cicatrix is

formed. Although not absolutely necessary in these operations, the probability of success is enhanced by the use of silver wire sutures.

FLEXIONS AND VERSIONS OF THE UTERUS.

Where the uterus is bent upon its cervix the result is called flexion; if the fundus inclines backwards it constitutes retro-flexion; if forward, ante-flexion; and in either of these cases the os and vaginal portion of the cervix may occupy a normal position in the pelvis. The point of flexion is usually at the internal os, and the angle may be quite acute. Normally the uterine canal is not straight, but curved, constituting a normal or physiological ante-flexion. In considering the possibility of uterine displacements it should be borne in mind that the fundus of the uterus is not arbitrarily fixed by any of its attachments, but espe-

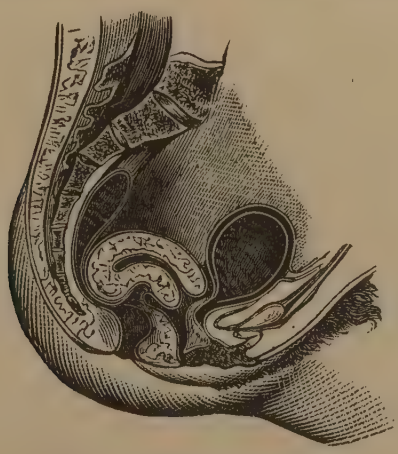


Fig. 47. Retroflexion of the uterus.

cially in an antero-posterior direction may vary its position quite considerably. In fact, the condition of the bladder or rectum as to emptiness or repletion will make quite extensive changes in the position of the fundus uteri.

If the fundus drop forward, carrying the os and cervix

backward and often upward, the axis of the organ acquiring no change in normal curvature, the result is called ante-version. If the proceeding be reversed and the fundus be

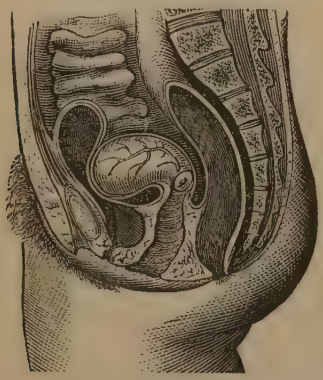


Fig. 48. Ante-version of the uterus.

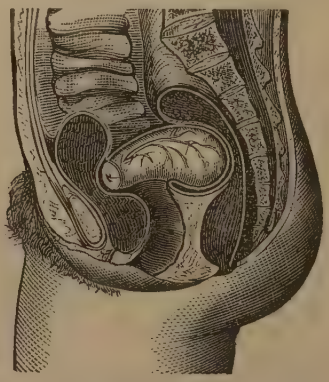


Fig. 49. Retro-version of the uterus.

carried backward, the uterine axis still retaining its normal curvature, the result is retro-version. Fig. 48 is a representation of ante-version, and Fig. 49 of retro-version of the uterus.

As a matter of fact, neither flexions nor versions usually occur in perfect separation one from the other; ante-version being usually accompanied by an increased degree of ante-flexion, and retro-version by a degree of retro-flexion. The extreme points of version may be said to consist in a nearly complete inversion of the axis of the organ; thus in ante-version the fundus would lay low and directly behind the symphysis pubis, while the os, with difficulty if at all reached, would be found near the promontory of the sacrum; in retro-version, the fundus would be found low down in the hollow of the sacrum, while the os, pointing in the direction of the umbilicus, would be found above and behind the symphysis pubis; such degrees of version being however very seldom observed.

Causes of version. In a state of complete emptiness of the bladder, the uterus, owing to the natural tipping forward of its axis, falls still farther forward, and becomes tem-

porarily really ante-verted, great distension of the bladder produces mechanically a retro-version, from either of which positions the organ usually assumes its normal condition upon removal of the cause. If however a laxity of the ligaments supporting the uterus, such as may be induced by rapid or recent child-bearing, be present, or if from chronic inflammation or the presence of fibroids, or from any other cause, the fundus be preternaturally enlarged or heavy, there is a tendency for the mal-position to become permanent. If this be further assisted by sudden violent exertions, such as lifting, straining at stool, falls or leaps from a height, as from a carriage to the ground, we have very good cause for permanency of the condition.

It is also worthy of consideration that owing to the intervention of the peritoneal fold, known as Douglas' space, between the uterus and rectum, distension of the latter organ, unless very excessive, does not produce ante-version of the uterus.

Causes of Flexion. Add to the causes producing version a thinning or weakening of the cervical portion of the uterus, from any accidental cause or diseased condition of the organ, and flexion may result instead of version, and once produced, by the obstruction to the circulation, or partial strangulation brought about by the flattening of the blood vessels at the point of flexion, the congestion of the fundus and consequent enlargement produced tend to make the condition perpetual. Indeed, no less an author than Hewitt believes that most cases of uterine enlargement, congestion and chronic inflammation are traceable to flexions as a cause; a position, however, not accepted by other gynæcologists, nor in harmony with my own observations. No inconsiderable number of flexions are congenital, their presence not being discovered until after the arrival of puberty, or more frequently until the presence of some pelvic

trouble, not at all connected with them, leads to an examination and their discovery.

Relative frequency. No reliable data can be given to exhibit the relative frequency of these malpositions, since the experience of no two observers has been alike. Owing to the natural anterior obliquity of the uterus it might be supposed that the prevailing versions and flexions would be of the anterior variety, but as a counter-balance we have the support of the bladder in front, perpetually tending to prevent anterior displacements. My own impression is that I most frequently meet with anterior displacements.

Lateral version and flexion. The uterus is seldom lateroverted or flexed, except it be from the presence of some tumor which crowds the organ to the opposite side. Cases of this kind I have frequently observed, but have never seen lateral displacement from any other cause.

Effects of version and flexion. As consequences of these displacements may be mentioned miscarriage, hypertrophy, descent, dysmenorrhea, menorrhagia, amenorrhea and sterility.

The disturbed condition of the circulation, causing congestion of the uterus, cannot fail to materially interfere with the functions pertaining to maternity, and we accordingly find that where by the increasing size of the uterus the flexion or version is not early remedied, abortion usually follows. While, as producing causes, ante-flexion and retroflexion are probably equal, more miscarriages occur with ante-flexion, because pregnancy is more likely to occur with this form of flexion.

Reference has already been made to the fact of congestion resulting from flexion, and time alone is required to produce a hypertrophy.

The uterine tissue at the point of flexion, if the angle be acute, atrophies to perhaps one half its normal volume,

so that the natural rigidity of the uterus is destroyed. With, then, a fundus enlarged and a cervix weakened, it will be seen that although we may reduce the flexion, the ability of the uterus to retain its proper shape is so much impaired that our utmost skill and patience will be required to effect a cure.

As a natural consequence of the hypertrophy, descent follows, and the position of the uterus is accordingly usually found to be too low in the pelvis.

Dysmenorrhea is of the mechanical form, and is the natural result of the contraction of the cervical canal, following its flattening.

Menstrual blood accumulates in the cavity of the uterus, clots form and are only expelled by contractions of the uterus resembling labor-pains. If by any means we secure a sufficient patency of the canal, this difficulty is usually removed. *Menorrhagia* results from venous stasis of blood, but if the constriction affect likewise the arteries to a sufficient extent, the reverse or *amenorrhea* may with less frequency result.

Sterility follows, since in the contracted condition of the cervical canal the spermatozoa are excluded, or rarely reach the uterine cavity.

Symptoms. In addition to what has already been mentioned among the results of flexions and versions, certain more or less symptomatic pains are usually felt. Backward displacements are, in a large percentage of cases, accompanied by pains in the back and running down the back of the thighs; the rectum is also mechanically affected by the pressure, causing at some times constipation; at others, irritation, accompanied by tenesmus and the secretion of mucus, and movements of the bowels may be accompanied by pain, even of a very severe character. The ability to

walk or stand upon the feet is often largely interfered with, on account of "uterine lameness."

In forward displacements, the pains are more likely to be felt in the vaginal or hypogastric regions and upon the anterior or interior surface of the thigh; vesical take the place of rectal difficulties, and the bladder, constantly pressed upon by the fundus uteri, is thus mechanically contracted in capacity and becomes irritable, a urinary tenesmus, with frequent urination, and in time catarrhal discharges take place.

In addition with either form of version, a series of nervous phenomena are observed, especially in nervous subjects, so varied in manifestation as to defy description, and so obscure in cause as often to completely mislead the observer. Every phase of hysteria, in its protean forms, nervous dyspepsia, functional disorders of the heart, neuralgias that make life a burden, and even insanity may follow in the track of these displacements.

Diagnosis. The diagnosis is not usually difficult. In ante-flexion the fundus uteri is felt through the vaginal wall behind the symphysis pubis, where it might be mistaken for a tumor. The direction taken by the uterine sound in introduction will however be natural, and its passage be effected without material trouble, if the difficulty be a tumor; while if flexion be present the sound will pass with difficulty, if at all, and the direction taken by its point will show the direction of the uterine axis.

In retro-flexion, the fundus is easily felt in the hollow of the sacrum, and the introduction of a finger in the rectum will serve to confirm and make more positive a vaginal diagnosis. The uterine sound also subserves the same purpose as in ante-flexion. Versions are easily recognized by the touch, and the subject requires no further mention here.

Prognosis. The treatment of flexions and versions is often tedious and difficult, and the final result largely depends upon the fidelity of the patient to instructions and treatment, as well as the patience with which she will persist. Various circumstances also enter into the composition of a case, among which may be mentioned irritability or tenderness of the uterus, the amount of relaxation of the vagina and uterine ligaments, the duration of the disease and the general health of the patient. Given favorable circumstances, our prognosis is favorable; otherwise it is safer not to promise too much, so far as cure is concerned. Relief from urgent symptoms may almost always be afforded. Cases of congenital flexion are seldom amenable to more than relief from distressing symptoms.

Fig. 50. Sims' uterine elevator.

Treatment. The first indication is to restore the uterus to its natural position; the second, to retain it in place. The pressure of the exploring finger is, in many cases, sufficient to carry an ante- or retro-flexed uterus into its proper position, so easily, even, that in some cases the reduction has in this way been accomplished without the knowledge of the physician, who thereby failed to properly diagnose the case.

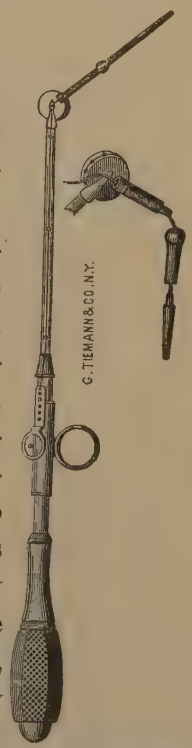


Fig. 51. Noeggerath's uterine elevator.

Comparatively few cases will

however be so easily reduced, and it will often prove advantageous to secure the benefit of position to assist. Thus, in ante-flexion and version, the patient should lie upon the back, with the pelvis elevated and the shoulders depressed. In retro-flexion and version, the "knee-elbow position" will assist us. But even then we may fail; and, to meet such cases, various instruments have been invented, under the general name of "uterine repositors." Of these instruments two cuts are here represented, that known as Sims' uterine elevator, Fig. 50, and Noeggerath's, Fig. 51, neither of which however seems to me as near perfection as the circumstances of the case appear to demand. By many the uterine sound is used in their stead, and in most cases answers as well. It is however open to the quite serious objection that in its introduction it is necessarily introduced with a considerable degree of curvature, corresponding in amount with the degree of version or flexion present. Reduction being then effected by a semi-rotation of the handle, it is evident that an extreme amount of lateral version will be brought about, while the pressure thus brought to bear upon the mucous membrane of the cavity may be such as to injure it. In this respect, and for these reasons, in extreme cases the repositor is the more desirable instrument. Occasionally I have found the introduction of the sound would reduce the displacement, as one might straighten a glove-finger by introducing the finger. Reduction of flexions has been brought about by the introduction of tents and dilation of the cervical canal.

To retain the uterus in position has taxed the inventive genius of very many. In some few cases in which, previous to the present attack, the position of the uterus had always been normal, the simple reposition of the organ, with a few hours of rest, will be found sufficient, or the same treatment daily pursued for a few days may be required. But a very

small per cent. of the cases we shall be called upon to treat will however be of this class, most of them being of long standing.

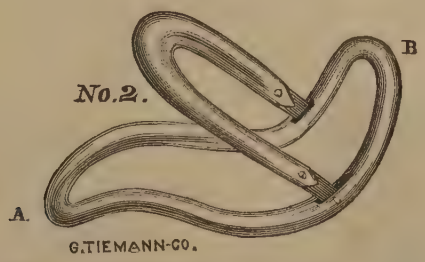


Fig. 52. Thomas' ante-version pessary (open).

As a means of relief in anterior displacements, the ante-version pessary of Thomas, Fig. 52, is perhaps as good and perfect as any similar device; but if at all used, it should be so small as not to press injuriously upon the adjacent structures. And from his later writings I am inclined to believe that he (Thomas) now discards this instrument in many cases where he once would have used it. As we may not in these cases have to deal with any material amount of descent of the uterus, the internal supporter,

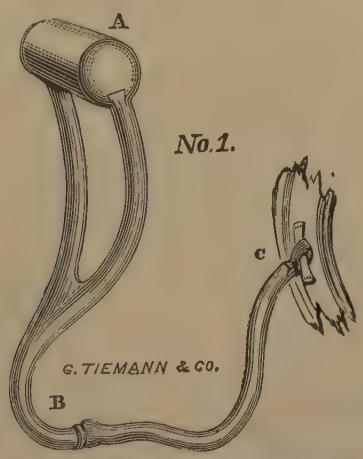


Fig. 53. Thomas' Cutter's pessary,

with its damaging distension of the vagina, will nevertheless, in addition to the relief afforded, prove curative in a

greater number of cases of version than of prolapse; and the same holds true, in every respect, of the various internal devices for the treatment of retro-version and flexion.

In both retro- and ante-flexion, and the corresponding versions, I consider it nearly as important as in prolapse, to

Fig. 54. McIntosh retro-version cup.

Fig. 55. McIntosh ante-version cup.

secure the required support without vaginal distension, and hence some means of deriving support externally should be adopted. Thomas' modification of Cutter's pessary, Fig. 53, is an instrument of this class, and is unquestionably in most cases superior to any internal supporter. The McIntosh

Fig. 56. Thomas' ante-flexion pessary (open).

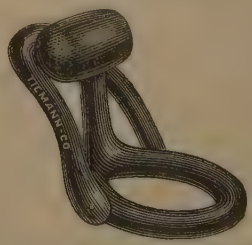


Fig. 57. Thomas' ante-flexion pessary (closed).

retro- and ante-version cups, Figs. 54 and 55, have given

me better satisfaction than any other instruments I have ever used for this purpose.

Of internal supporters or pessaries, Figs. 56 and 57, are representations of Thomas' ante-flexion pessary, open and closed.

But we meet with cases of flexion occasionally that are amenable to this, and others that demand a different treatment. The first class consists of those cases of flexion in which the cervix maintains a nearly normal position with considerable rigidity.

The second class, those cases in which the flexion is so persistent, and the curvature of the cervix so firmly maintained, that though we confer all possible support on the fundus, the curved axis of the uterus remains the same, the cervix being simply tilted as far out of position as the fundus approximates a correct position.

To meet these cases, resort should be had to an intra-uterine stem pessary, consisting in its simplest form, Fig. 58,

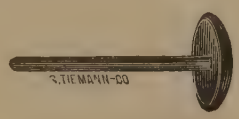


Fig. 58. Stem pessary.

of a round stem, two and a half or two and three-quarters inches in length, terminating in a ball or button at the lower end. A yet better arrangement is that of the Chambers stem pessary, Fig. 59, in which the stem, being split,

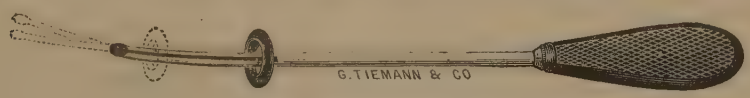


Fig. 59. Chambers' stem pessary.

opens laterally after introduction, and thus becomes strongly self-sustaining. The dilation of the cervical canal thus secured assists the splint-like character of the instrument in relieving the flexion in the first case, while in the second instance the flexion is converted into a version, and may be

sustained by the supporters already indicated. The use of intra-uterine pessaries is not however wholly unattended with some disadvantages. Cases will be met with in which the uterine cavity is completely intolerant of their presence, and it is not safe in any case to resort to their use without previously preparing the cavity, by their introduction for short periods at a time, and in all cases the appearance of pain or any evidence of inflammation will be an indication for their removal. In cases of congenital flexion the difficulties attendant upon cure are so formidable in some cases as to be insurmountable, and persistent and distressing dysmenorrhea and sterility being present, our only resource may lie in slitting the cervix to a point above the flexion, thus securing the patency of the canal.

INVERSION OF THE UTERUS.

By inversion of the uterus is meant a turning inside out of that organ. To perfectly understand the condition the mind has only to recur to the bag-like character of the uterus, to understand that it, like any other sack or bag, may be turned inside out or inverted.

Inversion of the uterus is classifiable into the two *general* divisions of *complete* and *incomplete*, either of which forms may be *acute* or *chronic*. The old distinction of *reducible* and *irreducible*, applied respectively to the acute and chronic forms, because the acute cases were supposed usually to be capable of reduction, the reverse holding equally true of the chronic form, is in the light of recent gynæcology improper, since many chronic cases may, it is now found, be reduced.

Opposed to and usually preventing inversion is the normal tonicity or hardness of the uterine parenchyma, but should this property be overcome by disease, pregnancy or the presence of tumors or polypi, inversion may under other favoring circumstances result.

Pathology. In incomplete inversion one cornus of the uterus may be indented, carrying with it more or less of the adjacent wall of the uterus, the entire mass however not passing through the cervix uteri, while in the complete form the entire organ passes through first the internal then the external os, and lies in the vagina or protrudes as a tumor between the thighs. The theory has been advocated by some authorities, that in those cases following closely upon parturition, there may have been a paralysis or loss of tone in that portion of uterine structure recently occupied by the placenta, which portion incurving upon the cavity of the uterus, is forced further by the normal contractions of the organ until partial or complete inversion results.

Causes. Nearly nine-tenths of all the cases are sequences of parturition, and follow either immediately upon the birth of the child, or at farthest within a few days. This class of cases is usually at once discovered and by proper treatment remedied, and as they with their treatment are within the domain proper of the obstetrician, this portion of the subject need not be further discussed here.

Those cases however which being undiscovered or badly or unsuccessfully treated become chronic, with all other cases, constituting of the whole a small but very important minority will be here considered.

The peculiar atony of uterine structure, conducive to these cases, may be brought about by long continued distension of the uterus by gases, fluids, as retained menstrual fluid, tumors or polypi, and the impending catastrophe may be precipitated by violent muscular exertion or lifting, by natural traction from the weight of a polypus, or by the efforts of Nature to expel a polypus whose attachment is near the fundus.

While cases have been reported in which inversion has occurred during violent exertions, without previously known

uterine disease, it is no argument that the relaxed and diseased condition did not exist; and it would seem to me absolutely impossible that a uterus possessing normal powers of resistance could by any accident become inverted, except by the traction of a polypus or some similar circumstance.

Prognosis. The unreduced inverted uterus, so long as it remains within the pelvis, is not always though usually the cause of much discomfort, but when the organ protrudes from the vulva and lies between the thighs, every symptom of inconvenience becomes augmented. The exposed mucous surface altered in its nature, and congested from interference with normal circulation, gives forth exhausting hemorrhages, and often becomes the seat of cancerous or other malignant growths.

In all cases of chronic inversion the prognosis can but be unfavorable, notwithstanding the recently discovered fact that some cases are capable of reduction even after so long a period as fifteen years of inversion. On account of menstrual activity and hemorrhages, the prognosis is graver during menstrual life than later.

Diagnosis. The diagnosis of *complete inversion* of the uterus is not usually difficult, yet requires care. Several times the condition has been mistaken for polypus, and the mistake only discovered upon attempting its removal as such, or even after such removal.

Partial inversion affords greater difficulties. In the forms of inversion and polypus there are many similar symptoms, such as leucorrhea, hemorrhage, a vaginal tumor or a tumor between the thighs, and we shall be guided in our diagnosis:

1st. By the history of the case.
2nd. The sensibility of the tumor.
3rd. Its feeling.
4th. By rectal examination.
5th. By vesico-rectal examination.
6th. By the use of the uterine sound.

In some cases the history of the case will show that the difficulty followed immediately upon parturition, miscarriage, the removal of a uterine polypus or the evacuation of a retained menstrual excretion. Perhaps indeed from some of these causes the diagnosis has already been made, which we may require to carefully confirm.

The tumor if sensible can hardly be a polypus, yet insensibility is not necessarily disconnected from an inverted uterus, hence the information derived from this means of diagnosis may afford only presumptive evidence.

The feeling of an inverted uterus is probably granular, that of a polypus smooth, while the supposed pedicle of an inverted uterus will be large and that of a polypus probably small.

In rectal examination the finger may pass beyond the suspected tumor to find no uterus in the pelvis, and if the examination be made shortly after parturition, the absence of an enlarged uterus in the abdomen will be evident to the tips of the fingers pressed down upon the hypogastric region. A sound introduced into the bladder will materially assist the finger in the rectum in determining the absence or presence of a uterus in the pelvis.

The uterine sound in inversion can not possibly pass beyond the neck of the tumor, while in polypus it passes beyond and into the uterine cavity. Should the pedicle of a polypus be quite large, or have its origin in the cervical canal at or near the internal os, some difficulty will be experienced in passing the sound beyond its attachment or more rarely still, if adhesions have been formed between the polypus and the vagina, it may be nearly if not quite impossible to pass a sound into the uterus.

But in these cases we have practicable the heretofore mentioned means at our command, so that we may consider with satisfaction the perfectness of our means of diagnosis,

which need only to be carefully applied to insure certainty in result.

Where however the inversion is but partial, or the difficulty is due to the presence of a polypus, which by its dragging down has produced a partial inversion, the difficulty is greater.

In such cases the uterine sound can not usually be passed to the normal depth, while in intra-uterine polypus dissociated with inversion, the depth of the cavity will usually be beyond normal. In case of polypus with partial inversion, if the polypus be diagnosed and removed, the inversion will probably become spontaneously reduced.

Treatment. The treatment is either simply palliative or directed towards a radical cure. Palliative treatment consists in measures calculated to diminish the hemorrhage and support the uterus, thus relieving the dragging upon its ligaments and natural supports. Instances have been recorded in which re-inversion has taken place spontaneously, both in recent and chronic cases. So too, instances have been found in which the mucous membrane has become changed to an integumental condition, in which case the discomfort of the patient has been comparatively slight.

Acting upon the hint thus afforded, the application of powerful astringents to diminish the vascularity and induce atrophy of the organ, has been found a beneficial plan of treatment. The per-sulphate and per-chloride of iron, alum, tannic acid, etc., etc., are here among the best agents at our command. Failing in this way to control the hemorrhage, the exposed uterus has been thoroughly cauterized with caustic potash or nitric acid, and after the neutralization of any free caustic by proper means, the uterus enveloped in lint or charpie is returned into the pelvis. A treatment so heroic should only be undertaken as a *dernier* resort, and is only defensible since it is the only known substitute for amputation.

Reduction of the inverted uterus has been accomplished in different ways. After placing the patient under the influence of an anæsthetic, the hand carried within the pelvis has grasped the uterus firmly, while the ends of the fingers pressing firmly upwards against the constriction have assisted to overcome it. Counter pressure is made with the other hand upon the abdomen externally, just above the symphysis pubis, as in the reduction of the recent or acute form. In this manner prolonged pressure has been successfully employed in the reduction.

Prof. White proposed the employment of an instrument somewhat like a pestle, with a cup-shaped face to apply to the fundus, and with this, steady and protracted pressure was to be made until the resistance of the internal and external os was overcome and the organ replaced.

Success too has followed the employment of an india rubber bag within the pelvis, and in apposition with the fundus. The distension of the bag with water for several hours a day on successive days, at length overcomes the resistance, and the fundus ascends to its proper place.

Failing in this and recognizing the dangers and inconveniences of amputation, Prof. Thomas devised and executed a different procedure. After anæsthetizing the patient, the uterus was carried high up in the pelvis, and held firmly by an assistant, while an incision was made through the abdominal wall down upon the constricting cervix. This was then dilated by an instrument constructed for the purpose, somewhat after the principle of the instrument used to stretch the fingers of tightly fitting gloves. In this way he succeeded in reducing an obstinate inversion of twenty-one months standing, which had resisted fourteen attempts at reduction in the ordinary manner, and restored to ultimate perfect health and usefulness an unfortunate woman.

Such a triumph in gynæcological surgery is scarcely dimmed by the fact that in a subsequent operation, although

the inversion was reduced, the patient died of peritonitis, a result often following the legitimatized operation of ovariotomy. This operation is yet in its infancy, yet it seems to me probable, that the day will come when with improved means and more extensive experience, it will take rank above the only alternative, amputation. It proposes, and if successful, does restore to society a perfect, useful woman, while amputation, resulting fatally once in three times, at best, returns a woman maimed and imperfect, as Prof. Thomas says, "with a certainty of sterility and all those difficulties in the future, which are the consequences of amenorrhea, or at least of very imperfect menstruation."

Amputation. The statistics of amputation of the uterus show that no more than two-thirds of the cases terminate favorably. It is performed:

1st. By ligation.
2nd. By ligation and excision.
3rd. By excision.
4th. By ligation and subsequent excision.

In *operating by ligation*, the uterus is securely ligated with wire or a strong cord, and the effects of the resulting suppuration are neutralized so far as possible by antiseptic applications.

The obvious objection is the putrefying mass which remains from three to thirty days in apposition to the vaginal walls, from the injurious effects of which it is impossible in all cases to absolve the patient.

In *ligation with excision*, the ligature having been applied, the mass is at once cut away with knife, scissors, écraseur or galvano-cautery. In some of these cases death has followed from slipping off of the ligature; in all cases the stump if inclined to ooze, should be treated with the actual cautery, the vagina being protected by a horn speculum.

In *excision*, the amputation is accomplished by scissors,

knife, écraseur or galvano-cautery, the succeeding hemorrhage being treated according to circumstances, but most effectually by the actual cautery. This method of amputation furnishes the poorest results of any, in one published report of eight cases, six terminating fatally.

In *ligation with subsequent excision*, the amputation is performed after a lapse of two or more days after the application of the ligature, and according to circumstances. Probably the best results follow this method of operating.

HERNIA OF THE UTERUS.

The descent of an ovary into a hernial sack has been known to drag after it the uterus. Farther mention of the subject is unnecessary, as no especial form of treatment is applicable to the condition.

AMPUTATION OF THE CERVIX UTERI.

This operation may become necessary or be performed for the relief or cure of congenital or acquired hypertrophy or elongation of the cervix, subinvolution, in hypertrophy of the uterus with prolapse, malignant tumors of the cervix and cancer of the cervix when limited to that structure. The dangers attending the operation so far as the operation *per se* is to be considered, are less than those of amputation of the breast. It may be performed with the knife, scissors, écraseur or galvano-cautery. The troublesome hemorrhage following the use of the knife, should lead to its general disuse; less hemorrhage follows the use of scissors; the écraseur is still better, but open to the dangerous objection that, without judicious care, adjacent parts may be dragged into the fold of the chain or wire and injured.

In this way the bladder or peritoneal cul-de-sac anterior or posterior to the uterus may be opened. If at hand, the

galvano-cautery is freest from objection. To make this means successful and reliable, the battery should be capable of heating the wire to a white heat, so that the parts may be rapidly divided, thus affording no time for the heat by radiation to injuriously affect the adjacent structures. The apparatus should also be so devised as to present the least possible liability to disorder; failure or imperfection in the action of the battery being the most common and serious objection to this method of amputation.

Anæsthesia having been produced, the patient is placed in the position for the use of Sims' speculum, and the cervix brought well into view. Two pairs of scissors, one straight the other bent at nearly a right angle, Fig. 41, will be found most convenient.

The cervix is with the straight scissors divided laterally to the attachment of the vagina, or as high as may be thought advisable, when with the curved scissors the two halves are cut off as high as desired. The process of healing will now be facilitated and shortened, if the cut edges be brought together and held in apposition by four or more silver sutures in the same manner that the anterior and posterior flaps of an amputated limb are retained in position. In this manner a covering of mucous membrane for the cut surface is secured, thus avoiding the longer and more tedious process of healing by granulation. This procedure can however only be serviceable when the hemorrhage is so easily controlled as to require no application of styptics, as in that case adhesion will not take place, and healing must follow by the process of granulation.

The supra-vaginal portion of the cervix is amputated when necessary in the following manner: A semi-circular incision through the mucous membrane at the junction of the vagina with the posterior face of the cervix is first made; a similar incision upon the anterior surface joins this, and the dissection is continued with the knife or preferably the

scissors, upwards and inwards towards the internal os as far as thought necessary.

If during this process, after the incisions through the mucous membrane are made, constant traction be made upon the cervix with forceps, it will be found comparatively easy to dissect out a conical portion, reaching as high as the internal os, after the removal of which the hemorrhage is to be stopped as in the case of amputation lower down. As it is impossible to ligate bleeding vessels, recourse must be had to the application of pledgets of lint or pieces of sponge wet in cool or hot water, of which I prefer the latter. Should these fail, the lint must be saturated with a solution of persulphate or perchloride of iron, and retained in place by a tampon. If fortunately the hemorrhage be easily controlled without styptics, the flaps may be brought together with sutures, as recommended in the case of amputation lower down.

In using the écraseur it has been recommended to transfix the cervix with needles, or hare-lip pins, just above the point at which amputation is proposed. As already indicated, care should be taken lest adjacent structures be implicated, and injury done to the bladder or peritoneum.

In amputation with the galvano-cautery the cervix should also be transfixed with needles, to serve as a guide for placing the wire. A sound in the bladder, locating that viscus, determines the attachment of the bladder to the uterus, while a finger in the rectum performs a similar service posteriorly. Having then encircled the cervix with the platina wire, the loop is tightened sufficiently to insure its retaining its position, and the needles removed before the current is turned on, to prevent their becoming heated. The battery being then set in action and connections established, the cervix is rapidly cut through, and the uterus returned into the pelvis, having first applied to the cut surface a bit of lint saturated with carbolized sweet oil.

CHAPTER XVI.

MENSTRUATION.

The phenomenon known as the menstrual flow, is a periodical flux or flow established at the age of puberty or sexual maturity and lasting during the child-bearing period, or on an average about thirty years. In temperate climates it is usually established at about the fourteenth or fifteenth year and ceases at the forty-fifth, its cessation being termed the menopause or "turn of life."

In tropical regions menstruation is established as early as the ninth or tenth year, ceasing proportionately early, while with the women of the frigid zones the appearance and cessation are in the same ratio later. Rapid child-bearing contributes to an early cessation of menstruation, and while the rule has been above stated, the exceptions are, that menstruation may not appear until the eighteenth, twentieth or even the twenty-eighth year, and continue until the sixtieth, or may close at even the twenty-first year and in many cases by the thirty-fifth.

While the typical interval between menstrual flows is twenty-eight days or one lunar month, it appears to be the natural disposition of some women to menstruate regularly every twenty-four, twenty-six or thirty days, and in one case that has come under my observation, menstruation seldom took place more frequently than once in three months.

Since then all these variations are not inconsistent with a condition of good health, the physician, when consulted with regard to any such irregularities, should attend more to the condition of the general health than to the irregu-

larity or rather abnormality of menstruation. If the flow be at greater or lesser intervals than those of the typical woman, it should be ascertained if the peculiarity has in this individual been heretofore observed, and whether any deleterious effect upon the general health appears to follow. And here the intelligence of the medical adviser may be taxed to the utmost, to in all cases determine whether ill health is the *cause* or the *effect* of the menstrual derangement.

In all cases the rule is a safe one and should be observed, that if after thorough investigation the general health be found unaffected, no attention should be paid to irregularities, as they may be constitutional. From time to time it is proper to scrutinize the condition of such patients, that no derangement of health may become established.

The anxious mothers of girls about entering this period of life very frequently importune their medical attendant for remedies to hasten or establish menstruation, and great harm is often done by injudicious meddling at such times. In all such cases no interference should be attempted, unless some other derangement be manifest.

The menstrual flow consists of a discharge of dark blood mixed with mucus and epithelial scales, and varies in quantity with different individuals from three or four to twelve or more ounces, and lasts from one or two to eight, ten or twelve days.

Menstruation is supposed to occur at or about the time of each ovulation, at which time a fully matured Graafian vesicle, arriving at the periphery of the ovary, bursts and allows the escape of the human ovule. Two or more of these ovules may be developed at the same ovulation, and it has been thought by some that in some instances of deranged health the ovaries mature the Graafian vesicles in alternation, thus producing the menstrual molimen at each two weeks instead of four. The commencement and end-

ing of menstruation mark two most important climacterics. During childhood the uterus remains in point of development nearly stationary, but as puberty approaches, it with the other organs of generation develops; its supply of blood and innervation are increased; the breasts develop; and mental and moral changes occur which in a few months transform the hoydenish, romping girl into the modest young woman. New desires and passions have birth, and fortunate indeed is the young woman whose past and present influences have been such as at this time to keep her in the paths of rectitude and virtue.

In addition to the effects of climate upon the early appearance or cessation of menstruation, habits of life exert an important governing influence. Ease, idleness, luxury and high living tend to produce early and free menstruation, while privation, hard labor and poor living tend to the reverse.

The function of menstruation depends for its accomplishment upon:

1st. The presence of mature and reasonably healthy ovaries.

2nd. A reasonably developed and healthy uterus.

3rd. A proper tone of the nervous system.

Its establishment indicates that impregnation may take place, although the visible sign of ovulation, menstruation, is not a vital necessity to impregnation, since this has been effected prior to the establishment of menstruation, and women have frequently borne successive children without an intervening menstrual flow. Menstruation is therefore to be considered as the visible sign only of an ovulation, which may take place without it. It can hardly be supposed however that menstruation can take place without ovulation, except as the result of systemic habit, although a

hemorrhage not properly menstrual but strongly simulating it may occur.

Origin of menstrual blood. All authorities are agreed that the main source of menstrual blood is the uterus, and I see no reason to believe, and know no reason why ordinarily it should be thought to have any other origin. It is true that in cases of amputation of the uterus, it is "reported" that imperfect menstruation has been accomplished, but in the record of these cases there is nothing to show that the entire uterus was extirpated; on the other hand there is every probability that the *cervix*, and perhaps a considerable portion of the *corpus*, would remain, sufficient at all events to allow of an imperfect menstrual discharge. As to those other cases in which, following double ovariotomy, and of course the cessation of ovulation, menstruation has exceptionally nevertheless taken place, it is probably nothing more than the result of constitutional habit, and the same principle may also account for the fact that some women between the ages of forty and fifty, and still regularly menstruating, although previously fertile are sterile, ovulation probably ceasing before menstruation.

Pathology of menstruation. At each menstrual epoch the uterus and its appendages become engorged and distended with blood, the mucous membrane of the uterus thickens and softens, and it is generally believed at the present time is shed off or exfoliated in a condition so changed and altered or broken down as to escape observation. It has been by some observers supposed that this shedding of the lining membrane so weakens the capillaries as to permit the escape of the menstrual blood. In some cases the membrane is passed in recognizable shreds or patches, and even in a state of entirety, constituting the diseased condition known as membranous dysmenorrhea.

It would appear that this may be considered the closing

or final stage of ovulation, as desquamation succeeds the febrile and eruptive stages of an eruptive fever, and that by this process the cavity of the uterus is freshened as to its surface, and made the more fitting receptacle for the nourishment of the ovum arriving by the Fallopian tubes from the ovaries. It hardly seems however that our knowledge of these processes is as yet as definite and positive as it is of many other processes apparently equally abstruse.

Physiology of menstruation. Why the phenomena of ovulation and menstruation should recur with such regularity, month after month and year after year, in some women scarcely varying an hour, is a question which has long lacked an answer; and if the theory here presented is imperfect or erroneous, it has to my mind the merit of being the best and most reasonable as yet proposed.

The investigations of Pflüger tended to show that these operations were but the result of a continually accumulating irritation to the ovarian nerves, maintained by the growing Graafian vesicles. That for a time the irritation is sensibly inoperative, but by cumulative effect a crisis at length arrives, made recognizable to us by the congestion of the reproductive organs, the rupture of the vesicle, the escape of the ovum, and especially the menstrual hemorrhage.

To my mind this is not the only illustration of the same principle. The system becomes affected with a poison which, for want of a better term, we call *malaria*, be it what it may. After a varying period of incubation its effects, preceded by premonitory mutterings, are manifested by a stage of depression called "chill." The well-known reaction—fever, the sweating stage and period of quiescence are again and again succeeded with marvelous regularity, day after day, by the stage of depression.

During the stage of quiescence, the "well day" in tertian ague, the patient often resumes his ordinary avocations,

but little the worse for his previous day of discomfort. But his physician knows very well that he is not well. The same poison is in the system to-day that yesterday created such a manifest disturbance. He does not acquire from day to day a sufficient degree of malarial poisoning to in expending itself produce the chill and fever; for if moved to a healthy locality the same phenomena continue for some time to be manifested.

Rather it is supposable that the influence is continually operative, continually depressing the nerve centers until a crisis arrives, and with a rebound the tonicity of the system is carried to an extreme as far above the ordinary level as it had been by the morbific influence carried below.

Take another physical illustration from Nature. A tree falls into some large river, and floating down stream its roots at length touch the bottom, and by the deposition of mud and sand it becomes securely anchored, its branches extending down stream. The current of the river acting steadily, overcomes the resisting power of the branches; they are quietly depressed until they perhaps disappear beneath the surface of the water. But a crisis comes; the elasticity of the boughs and trunk overcome the depressing influence of the water, and the tree rises with a rushing, crashing sound, and a rebound which carries it far above the water. And thus, with a regularity only limited by the steadiness of the water flow, is the process again and again repeated in the well-known "sawyer."

In the same manner the accumulating disturbance of the maturing ovum acts upon the uterine nerves, until at length an explosive crisis termed *parturition* is developed; and I am inclined to believe that many cases of insanity, epilepsy, chorea and other nervous diseases are governed by the same law.

Thus it will be seen that a proper tone of the nervous system is necessary to normal menstruation, proof of which

is afforded by the cases which come to the knowledge of every physician, in which menstruation is brought on prematurely, and checked or the flow entirely prevented by the strong emotions of grief, fear, anger and the like.

It may not be out of place here to allude to the theory which has been advanced by some, that all menstruation is abnormal and that its universal occurrence with women is but the result of an inherited habit, acquired if not in the infancy of the human race, with its first steps toward civilization; and that if the human animal had been in the ages past, and was at the present time left as free as the inferior animals are, to gratify his or her natural desires and propensities, that the result would have been such early and constant gestation on the part of women, that menstruation would never have occurred; but that owing to reasons of a moral character as well as the prudential motives of desiring to be in condition to properly care and provide for children before begetting them, copulation has with such universality been neglected, that the result has been to engraft upon the human female a truly pathological process, which descending from generation to generation, and fostered and kept alive by a continuance of the same habits which first gave it origin, has caused menstruation to become a perpetual habit.

This theory is based upon one truth which we may all accept, that menstruation is not like respiration, or the action of the heart an essential process; but although other arguments have been adduced in its support, to my mind the case is not proven.

We read in Genesis xxxi, 35, of Rachel sitting upon the images which she wished to conceal from Laban: "And she said to her father, let it not displease my Lord that I can not rise up before thee; for the custom of women is upon me," from which it would appear that during the earliest history of the human family to which we have access, men-

struation, undoubtedly here alluded to, was already regarded as a "custom of women."

And although we admit its non-essential character, and also that if gestation be constantly brought about that menstruation will not occur, it does not in the least prove that menstruation is an engrafted habit, or that the highest and best physiological results to woman would follow such continuous childbearing; on the other hand there is every reason to believe that it would be injurious, and any course in life not conducing to the greatest good health of the female, must be considered pernicious and unnatural.

Effects of menstruation. The most decided effects of menstruation, as naturally conducted, seem to be shown in nervous results. Excitability, with a disposition to undertake unusual tasks and undergo unusual exertions, is often manifested, while in other cases a feeling of being "unwell," with weakness or pain in the back and pelvis, disinclines to active exertions, and an irritability or peevishness of temper may be noticeable.

It has been asserted, (Schrœder, p. 326), that there is a fall of temperature in the vagina amounting to one degree of heat, a decrease in the frequency of the pulse and a diminution in the secretion of urea. The digestive system is especially liable to disturbing fluctuations, while upon the physical system, unless the flow be so great as to become debilitating, no marked effects are observable.

AMENORRHEA.

The absence of menstruation, when it should be normally present, is termed *amenorrhea.* If the discharge, having been previously and usually present, be suddenly checked, it has been termed *suppressio mensium*, while in the case of

those women of proper age, who have never menstruated the condition receives the name of *emansio mensium*.

Reference to the pathology of menstruation, in the article upon menstruation, will explain the conditions necessarily present, in order that menstruation may be properly performed. Reference to that article will also show that menstruation may be regarded more as a symptom than as a vital process, and accordingly the manner of its performance whether with or without pain, whether it be in excess, deficiency, or as in the case under consideration entirely wanting, should be considered as symptomatic.

And I can not but consider it of the greatest importance that we should acquire correct views upon this point, since our treatment, especially in the case of amenorrhea, will be entirely governed by the views we entertain. It was formerly believed that *phthisis* and many conditions of debility were brought about by the lack of menstruation, and that as one of the steps necessary to restore health, the discharge must be re-established. In accordance with this view the stomachs and entire systems of such patients were tortured and racked by remedies of "emmenagogue" character, and it is to be regretted that even at the present time, popular belief, and in too many cases the opinion of the physician, confirms and adopts such treatment.

The statement of Thomas, that "No proof exists which can substantiate the view that amenorrhea ever induces permanent lesion of any organ in the body," should be indelibly fixed in the mind of every one who attempts to prescribe for these disorders.

Causes. The causes of *amenorrhea* may be considered as:

1st. Mechanical.

2nd. Functional.

3rd. Symptomatic.

The mechanical causes are:

a. The absence, imperfect development or atrophy of either uterus or ovaries.

b. Occlusion of either uterus or vagina.

c. Cystic degeneration of both ovaries.

d. In some cases inflammations of the uterus or peritoneum.

The *functional* cause is depression of the nervous system, which may arise from profound mental impressions, but more frequently from debilitating or luxurious habits of life, lack of exercise or wasting diseases; while the purely *symptomatic* causes, or causes of which amenorrhea is most markedly but a symptom, are the various depraved conditions of the blood accompanying chlorosis, phthisis, cancerous cachexy, Bright's disease, lardaceous or waxy liver, and like constitutionally debilitating affections.

Diagnosis. As amenorrhea is a self-evident condition, our attention should be directed to the discovery of the *cause.* Pregnancy, tardy menstruation and the menopause should be excluded before the commencement of any treatment.

The usual signs elsewhere mentioned will serve for the diagnosis of pregnancy, while for the two latter conditions it is sufficient to critically interrogate the general condition of the health, and if it be found that it is not suffering, it will be prudent to defer active treatment until satisfied of the true condition. In tardy menstruation especially we may find the mechanical causes heretofore mentioned operative, and treatment for their removal may accordingly become at once necessary.

Treatment. Manifestly from what has heretofore been stated, the treatment will be entirely governed by our conception of the cause. Occlusions of the vagina or cervix

uteri must be treated as directed under the articles upon those heads. Total absence of the uterus is an extremely rare condition, rudiments of the organ being usually found even in those cases where its development is so slight as to make it practically wanting. I have seen one case in which the most thorough examination during life failed to show even a rudimentary vagina or uterus, but as it was impossible to obtain an autopsy, it is impossible to say what might have been thus revealed.

If the uterus in a rudimentary or atrophied condition be discovered, persistent and long continued judicious treatment may often avail much. In slight cases the simple introduction of the uterine sound daily, for three to five days immediately preceding the time of the menstrual flow is, by the irritation and consequent congestion thus produced, sometimes found sufficient to bring about a menstrual discharge.

But if, as is most likely in a case of amenorrhea of long standing, we are unable to tell at what time ovulation is performed, or menstruation should be accomplished, we may resort to the expedient of introducing the sound at intervals of five to seven days for a month or two. The introduction of tents, by the same physiological means, has proven beneficial. Faradization and the use of intra-uterine pessaries has also been resorted to.

For some supposed galvanic effect such pessaries have been variously constructed in part of copper and part of zinc, or alternate beads of the two metals have been strung upon a wire and introduced. Such an instrument is represented by Fig. 31, page 140. In such cases care must be taken to avoid too great a degree of irritation and congestion, the pessary being removed upon the appearance of pain or indications of the appearance of inflammation. If at any point in the treatment of amenorrhea stimulating emenagogues are serviceable or allowable it is here, but

they should be used with care, as they have as a class undoubtedly done more harm than good.

Marriage, where the vagina has previously been found of nearly or quite normal development, has been followed by good results.

In all these cases the condition of the general health should receive proper attention, and in case no constitutional suffering be present, but simply amenorrhea, it is more than probable that the case had better be left in the hands of Nature.

Cystic degeneration of the ovaries may demand their removal, not that it will remedy the amenorrhea, which is of course incurable, but in consequence of the structural complications likely to affect other organs. If the cause should be found to be inflammation of any of the pelvic viscera, the treatment will of course be such as is applicable to the existing disorder.

Where the amenorrhea is dependent upon the condition of the blood or general system, that course of medicine and treatment should be adopted which will best remedy the condition, if it be remediable. The ferruginous tonics are especially indicated in these cases usually, combined if indicated with cinchona, hydrastis, columbo or other bitter tonics.

The so-called emenagogue agents are almost never indicated in these conditions, except they are of a tonic or stimulating and sustaining character, as the helonias, aletris, aloes, myrrh, &c., &c.

Nourishing full diet, appropriate bathing and exercise constitute as important a class of remedial agents as we can command. In the diet such articles only should be used as are eaten with a relish, or the greatest relish, and which experience shows in each individual case cause no unpleasant after effects. Baths should be of an agreeable temperature; if moderately cool all the better, but never of a

temperature to cause chilliness, but rather a glow of warmth afterward.

Exercise, to attain its greatest benefit, should be in the open air, and be so arranged as to become a pleasure rather than a duty. I have little confidence in an enforced walk taken simply because exercise is prescribed, but if some pleasurable motive can be combined with a walk or ride the greatest possible advantage may thus be gained.

VICARIOUS MENSTRUATION.

Cases have been met in which, from old ulcers, the nose, the ears and other parts of the body, a periodical hemorrhage has occurred.

Where this hemorrhage takes the place of the menstrual flow, which is extremely scanty or more likely absent, it has received the name of *vicarious menstruation.* In its pathological conditions and treatment it is analogous to amenorrhea, of which it may be but a manifestation. The same general plan of treatment that has already been laid down under the head of amenorrhea is therefore here applicable.

MENORRHAGIA.

By menorrhagia is meant any unusual or increased flow of blood occurring at the menstrual period. In this respect it differs from *metrorrhagia,* which is likewise a hemorrhage from the womb, but which occurs irregularly, or at intermenstrual periods.

Menorrhagia may consist in an increased menstrual flow, yet of so trifling a character as to be productive of little else than inconvenience, or the amount of blood lost may be so great as to produce debility and general loss of health, and in rare cases endanger life. In estimating the extent

of a menorrhagia, account must always be taken of the idiosyncrasy of the patient, since it appears to be normal for some women to lose three or four times as much as others, and the general or constitutional effect should determine the judgment as to the necessity for interference.

Causes. The causes are numerous. Among the principal may be enumerated:

a. Sub-involution.

b. Chronic endo-metritis.

c. Granulations of the lining membrane of the uterus.

d. Diseases causing a debilitated condition of the system, as chronic affections of the lungs and liver, Bright's disease, &c., &c.

e. Excessive or long continued lactation.

f. Luxurious or sedentary habits of life.

g. Inversion of the uterus.

h. Tuberculous deposits in the uterus.

i. Congestion attending upon flexions.

j. Climacteric hemorrhages, &c., &c.

In addition we may have causing *metrorrhagia,* cauliflower excrescence, and ulceration simple or eroding of the cervix uteri, uterine polypi, cancer, retention of some portion of a past conception, the development of hydatids, excessive venery, &c., &c. Hewitt observes that menorrhagia has also been known to be present in cases of lead poisoning.

Irritability of the ovaries from whatever cause is often the source of uterine hemorrhage. The development of fat may produce scanty or profuse menstruation. Violent mental emotions of grief, joy, but perhaps more notably anger, may often produce a menorrhagia; and while a uterine hemorrhage is more likely to follow these mental disturbances, if they occur at or near the menstrual period, it may ensue at any time. During the attacks of violent

febrile diseases it is not an uncommon occurrence for a menstrual flow to come prematurely on, and it to some extent stamps the febrile affection as one of severity.

Very slight vegetations within the uterus, and polypi of apparently insignificant size, often give rise to very persistent, intractable and even fatal uterine hemorrhage.

Diagnosis. From what has been said it will be seen that a full diagnosis, that is one which points out the *cause* and suggests the proper treatment, is often made with great difficulty. In women of child-bearing age, where the menstrual flow has been for one or two months absent, the occurrence of a flow, especially if in immoderate quantity, whether accompanied by pains or not, whether the patient be married or single, is always sufficiently suggestive of abortion to put the prudent practitioner upon his guard.

It may not be amiss here to caution the young practitioner against expressing the slightest intimation that may reflect upon the character of the patient, no matter how strong his own convictions may be. Even should he from discovering the unquestioned product of conception be enabled to make a positive diagnosis, it will not be often to the advantage of any one that such knowledge should become public. It is equally the duty of the medical attendant to guard the reputation and the health of those placed in his hands.

Bearing in mind the causes heretofore given, a diagnosis may in most cases be made out by the exclusion of those causes which seem improbable or impossible, until the true cause is reached. In uterine hemorrhages occurring at a time of life bordering upon the close of menstruation, care must be taken lest the disturbance be attributed solely to approaching menopause, and thus receive too slight consideration. In such cases especially it will not always be an

easy matter to definitely determine the cause; hence such cases should always receive such full and explicit examination as to render it morally certain that the "turn of life" is about to be reached, before placing them in that category upon expectant and palliative treatment.

Treatment. Manifestly the treatment must vary with the cause, but as this is not at all times readily discoverable, it may be necessary for the time to adopt general measures of relief pending the discovery of the cause. It is very true that in many cases the cause will even upon a superficial observation become evident, and the proper treatment may thus be at once inaugurated.

It would not however answer for the physician to suppose, because a woman complains of profuse menstrual or inter-menstrual discharge, and presents herself in a feeble and anæmic condition for treatment, that he had at sight discovered the cause in her anæmia, for this feebleness and debility would be the natural result, be the cause what it might, of such a drain if long continued.

If called during the active progress of the hemorrhage, we should enjoin upon the patient strict quiet and rest in the recumbent posture, on a moderately hard bed, preferably a mattress, in a room moderately cool. Cool acid drinks only should be allowed, and a strong infusion of cinnamon bark may be taken internally cold, in dessert or tablespoonful doses every half-hour or hour, regulating the frequency of the dose by the urgency of the symptoms and the effect produced by the administration. Should the hemorrhage be violent and prostrating, the tampon to the vagina, and in extreme cases a tent or plug to the os uteri, may become necessary. The administration of gallic acid in doses of five grains every two or three hours may be found of

service. In obstinate cases I have often made use of the following:

℞. Pulv. alumen., ʒ ss.
Pulv. kino, grs. xv.
M. Ft. chart. no. vj.
Sig. Take a powder every two or three hours.

Should dizziness or other unpleasant sensations about the head appear, it will be an indication to make the powders smaller or decrease the frequency of the dose. The oils of *erigeron* and *erechthites*, while otherwise serviceable, often disagree with the stomach so seriously as to prohibit their use.

In the interim between the hemorrhagic losses attention should be paid to the general health. In this connection no single remedy will be found so universally applicable as iron, and probably no form in which it is administered is preferable to the carbonate.

In connection may be used the *lycopus virginicus*, *solidago*, *carduus lactea* and other similar remedies in infusion, tincture or fluid extract.

In the meantime if any cause be discovered of a mechanical nature, as the presence of polypi, a sub-involuted or chronic inflamed uterus, a granular condition of the mucous membrane, &c., &c., proper treatment should specially be adopted. If polypi are present, remove them; chronic enlargement of the uterus may demand such remedies as the gossypium, ergota, vin. symphyt. comp., syr. mitchellæ comp., &c., &c., with the general measures mentioned under the head of chronic metritis.

The avoidance of sexual connection or excitement is often indispensable, not only in cases of enlarged uterus but ovarian excitability.

If granulations are present they may generally be removed with a curette or scoop, after which hemorrhage from that source will cease.

Throughout the treatment it must be borne in mind that hemorrhage from the uterus, whether taking the form of a menorrhagia or metrorrhagia, is not a disease but a symptom, and that no treatment can be philosophical, or as a rule successful, which is not directed towards the primary lesion.

DYSMENORRHEA.

As has been elsewhere mentioned under the head of "menstruation," the phenomenon of menstruation is in its mechanical execution brought about by an engorgement of the entire vascular system of the internal organs of generation. The increased weight and bulk of the uterus and ovaries may, in cases that may be considered perfectly healthy, cause feelings of weight, pelvic uneasiness, lassitude and even unpleasant or aching sensations in the back.

I say perfectly healthy with this understanding, that such cases are not subjects that can be benefited by treatment of any kind, nevertheless believing that a sensation really unpleasant, as the pains in the back for instance, can not be viewed in any light as physiologically normal or necessary.

When, however, menstruation becomes connected with severe or distressing pains, we attach to the occurrence the name of *dysmenorrhea*, or call it painful menstruation. Nor do I see that we shall better our understanding or treatment of the subject by limiting the term as has been done, to those cases only, in which the cause of the pain is found in some uterine derangement, thus excluding all cases in which, although the pain appears with each recurring menstrual epoch, its cause is found in some peritoneal or ovarian derangement.

I shall therefore treat of all cases in which pain of unusual character occurs during the menstrual period as dysmenorrhea, believing that by so doing the subject of relief for these difficulties may be best presented, even if a slight pathological error shall be committed.

Perhaps no other complaint, which is at all common, is liable to produce such an amount of misery as the one under consideration. The persistent regularity and determination with which it recurs with each menstrual period, the torture and anguish which it may bring to the sufferer, the certainty that relief at one time is only to be succeeded in three or four weeks by another season of torture, renders the inter-menstrual period one of such dread and anxiety that it is not at all unaccountable that continuous melancholia or even insanity may follow.

The seat of the pain cannot in all cases be defined, but is usually believed to be in the uterus. It is generally of intermittent character, especially in the obstructive forms, and resembles so much the character of the pains present in labor or abortion, as to render the diagnosis from the latter accident at times difficult or almost impossible. While centering in the locality of the uterus, and causing great sensitiveness upon pressure, the pains may radiate over the crests of the ilia to the back or down the inner and anterior surfaces of the thighs.

In some cases, after the subsidence of the acute pains, a soreness will be felt for several days in the regions principally affected. In point of severity it varies from a scarcely noticeable discomfort to an almost unendurable anguish.

Dysmenorrheas have been variously classified by different authors. The classification here adopted will be into:

1st. Obstructive.
2nd. Congestive.
3rd. Neuralgiac.
4th. Rheumatic.
5th. Ovarian.

The cause of a very large number of cases of painful menstruation will be found in some obstruction to the free passage of the menstrual fluid from the cavity of the uterus. This obstruction may consist in:

a. A partial closure of the cervical canal at either the external or internal os, which closure may be either congenital or acquired.

b. Closure of the canal from flexions, and these may be congenital or acquired.

c. The presence of tumors or polypi.

d. The exfoliation of large shreds of the lining membrane of the uterus, causing the so-called "membranous dysmenorrhea."

e. The congestion of the membrane lining the cervical canal which may accompany an inflammation.

With reference to the closure of the *os internum* or *externum*, it may be said that if congenital it will not be discovered usually until after puberty and the establishment of the menstrual flow, if acquired, it may follow injuries producing cicatrization. In either event the canal, even although permitting with tolerable freedom the passage of a small sound, may nevertheless be insufficient to allow of the passage of the menstrual fluid if poured out with considerable rapidity, hence the formation of clots whose expulsion will cause pain.

Closure of the canal through either ante- or retro-flexion, is a not uncommon cause of dysmenorrhea, and besides the mechanical obstacle thus afforded to the free escape of the menstrual fluid, it operates indirectly to make the disorder graver and more intractable. The obstruction to the free flow of blood through the uterine vessels, caused by the flexion, may cause a hyperæmic or congested condition of the organ, and the pressure thus brought to bear upon the uterine nerves makes the organ unduly sensitive, while the increased flow, sometimes but not always accompanying, adds to the embarrassment already existing.

It is self-evident that tumors or polypi, by blocking up the uterine canal, may form a mechanical obstruction to the flow, and hence pain, which symptoms may be increased in-

directly by the more or less altered or diseased condition of the structures present in such cases.

The exfoliation of shreds or as has happened entire casts of the mucous membrane lining the uterus, an exaggerated condition of it is believed the normal result in menstruation, furnishes a mass which is unable to pass through a canal sufficiently patent to admit of the ready escape of normal menstrual blood, and here again the result is the pain caused by uterine contractions to expel the foreign body.

Congestion of the mucous membrane lining the cervical canal, by encroaching upon its caliber, may prevent the free escape of the menstrual blood, and favor coagulation. The purely congestive form of dysmenorrhea exists with a hypertrophied uterus, from subinvolution or chronic inflammation. The already enlarged uterus presses upon its nerves, making them hyper-sensitive, and this difficulty, increased by a menstrual congestion, develops a dull heavy aching pain.

The neuralgic form often accompanies other neuralgic symptoms. Its production is favored by high living, rich diet with sedentary habits, and the cultivation of the mental to the neglect of the physical powers. In some cases the pains of dysmenorrhea take the place of a disappearing facial neuralgia, which after the close of the menstrual period returns to its old location. In neuralgic dysmenorrhea, the pain continues throughout the menstrual period, never entirely leaving, but being often mitigated by warm applications as are other neuralgias.

A rare form of dysmenorrhea from its association with a rheumatic diathesis, and its amenability to treatment directed for the relief of rheumatism, has been called *rheumatic dysmenorrhea.*

Ovarian irritations and congestions are often rendered painful by the menstrual congestion, causing the act of menstruation to be painful. In these cases the pain is more

likely to be referred to a previously sensitive or painful ovary.

In addition to the heretofore mentioned forms of dysmenorrhea, it has been observed to occur in connection with a sensitive or inflamed peritoneum. Should the peri-uterine peritoneum be in a state of sub-acute or chronic inflammation, there is a probability that with the menstrual congestion the symptoms may become more active, and that the latent inflammatory action may be rekindled.

Diagnosis. Suffering and pain at the menstrual period are self-evident symptoms, and it requires no skill to pronounce such a case one of dysmenorrhea. To learn the *cause* of this *symptom* and apply the proper treatment for its removal is another and far more difficult matter. Yet the success of curative treatment must depend almost entirely upon the correctness of our views concerning the cause.

A thorough investigation of the case should therefore be made in all cases. The symptoms will be found to vary in an important manner in different cases, and attention to these variations, aside from any physical diagnosis, will many times point to the true nature of the case.

While pain is a symptom common to all, it may precede the flow, ceasing when once it is established; it may last from the beginning to the end; or it may assert itself principally during the last day of the flow, or even after its cessation. The fluid discharged may be scant or copious, and fluid or coagulated.

Probably the largest number of cases is due to some of the conditions pertaining to the obstructive form. As heretofore remarked, a cervical canal which may with tolerable ease permit the passage of the uterine sound, may nevertheless be inadequate for the escape of the discharge should it occur rapidly or in great quantity; hence these two elements, the quantity and rapidity of discharge, must be considered in

forming an opinion as to the adequacy of a cervical canal to properly serve for menstrual purposes. Where the pains commence at or soon after the commencement of the discharge; are intermittent and resemble labor pains; where clots of considerable size and consistence are present; and where a careful examination discloses no membranous shreds, thus excluding the membranous form of obstruction, the probabilities are that we shall find narrowing of the canal from congenital or acquired closure, congestion, flexion or foreign growths.

Whether the constriction most frequently occurs at the external or internal os, is a mooted question of much less importance than the determination of constriction. A digital examination will alone often determine the presence or absence of flexions, which diagnosis will be farther verified by the direction taken by the sound in following the canal. This verification is quite important, as more than once it has happened that patients have applied to me with supposed fibrous or other tumors growing in either the anterior or posterior cul-de-sac, in whom the introduction of the sound disclosed the fact that the supposed tumor was nothing more than an ante- or retro-flexed *fundus uteri.*

The discovery of the cause of narrowing of the canal is therefore simplified by the use of the sound, and after by this instrument excluding flexions and fibroid or polypoid tumors imposing upon its canal, we are safe in considering the deficiency of the canal to be either *congestive* or *strictural.*

The *congested* mucous membrane of the cervix is usually more or less everted and pouting, as seen through the speculum. The presence of polypi usually gives rise to metrorrhagia or leucorrheal discharges, and the sound will disclose the presence of these or other growths blocking the canal. If the dysmenorrhea be membranous, the expulsion of the membranes, which may be found by search, ends the

pain, the remaining portion of the menstrual period being normal. In some cases this membrane is only discharged at intervals of two, three or four months, the intervening menstruations being painless.

The *congestive form* may be known by the enlarged and often sensitive uterus; the pain is duller and heavier; it comes on before the commencement of the flow, and is usually ameliorated or relieved when the flow is well established; and it is often accompanied by considerable febrile reaction and flushing of the countenance.

The *neuralgic form* attacks neuralgic patients, and is notably relieved by treatment of an anti-neuralgic character. The discharge is not clotted, and the pain usually lasts throughout the flow unless relieved by treatment.

Prognosis. Usually favorable where we can control the patient, but at the outset it should be understood that some of these cases require a considerable time and attention.

Treatment. The treatment may be considered under the heads of *palliative* and *curative.* Where the dysmenorrhea belongs to any of the non-obstructive forms, palliative measures are especially desirable during the progress of treatment, which may be designed to remove the diseased condition. For this purpose a great variety of means have been used.

The warm hip and foot-bath, warm fomentations of hops or stramonium over the region of the uterus, cups to the sacrum, and the application of vapor of chloroform or carbonic acid gas to the os and cervix uteri, in the manner described under the head of cancer of the uterus, are among the external and internal applications which will be found useful.

Internally warm teas, as infusions of *hedeoma*, *leonurus*, *mentha viridis*, &c., will be serviceable; or we may administer the tincture of gelseminum in full doses, using if de-

sired in combination the tincture or fluid extract of conium or stramonium. Some very severe cases may require for alleviation the use of an opiate, as morphia by mouth or hypodermic injection. Chloroform and ether, by inhalation and internally, have been often used with good effect. Prof. Simpson speaks of the application of a chloroform blister to each groin as successful treatment in many cases. It is used as follows: "A small circular piece of lint just of sufficient dimensions to be easily contained within a watch-glass, being steeped in chloroform, is placed in either groin and covered at once with the watch-glass. This has the effect in a few minutes of producing a blister, and is usually successful in relieving the patient's sufferings." Pending curative proceedings these or similar means may be used even in obstructive dysmenorrhea.

Curative treatment. The indication in obstructive dysmenorrhea is to remove the obstruction. Where the difficulty arises from constriction of the cervical canal, two plans of treatment have been adopted, *dilation* and *incision.* The older plan was that of dilation by tents and bougies. Owing however to the length of time required, the tendency to recurrence of the constriction, (see Stenosis page 143), and the likelihood by such prolonged tampering to excite inflammations of the uterus and surrounding peritoneum, gynæcologists at the present day usually prefer incision.

This should be performed at a period as remote as possible from menstruation. The patient is placed in the position for the use of Sims' speculum, and the cervix uteri being exposed is held with forceps, Fig. 60, or tenaculum, and the incision made with one of the several forms of hysterotome, the incision being carried up to and involving the internal os. Or instead the bi-lateral division of the cervix may be made with scissors, as high as the junction with the vagina, where with a bistoury the lateral incisions

may be carried through the internal os, care being taken not to incise too deeply for fear of wounding the uterine plexus of blood vessels, or penetrating the peritoneum.

Fig. 60. Double tenaculum forceps.

By whatever means the incision may be made, the hemorrhage is not usually important, and may be controlled by applying a pledget of cotton lint steeped in a solution of persulphate or perchloride of iron, held in place by a tampon in the vagina. After twenty-four hours it should be removed, and in case of fresh hemorrhage re-applied.

To prevent closure of the wound it must be re-opened daily with the finger or by the use of the sound. Some inflammation is likely to follow, for which we should be prepared to adopt the proper treatment, and the patient should be kept quiet until all danger is past, treatment being adopted according to circumstances as they may arise.

If the cause of the obstruction be flexion, the treatment elsewhere laid down under the head of flexions should be adopted. In some cases of obstinate, and especially congenital flexion, also when the cervix is unduly elongated, it may be impossible to gain relief in any other way than by the surgical procedure of slitting the posterior or anterior lip, according as the case be one of ante- or retro-flexion.

For this operation the patient is laid in the left semi-prone position, as for the use of Sims' speculum, and the uterus is fixed by forceps or a tenaculum. With one or two clips of the scissors the required division is effected as

high as the vaginal attachment. If upon examination the stricture appears to have been entirely removed, and that the cervical canal, from the facility with which a good-sized sound may be introduced, is freely open, this terminates the operation; but if the internal os seem too narrow, or the narrowing caused by the flexion appear to be higher up, the incision must be continued upward to the cavity with a hysterotome or probe-pointed bistoury. In all such operations in connection with flexions it must not be forgotten that, owing to the flexion, the uterine parenchyma will perhaps be atrophied at the point of flexion; hence the normal amount of tissue cannot be relied upon, but the incision must be made carefully, lest the rectum behind, the bladder in front or the peritoneal cavity be perforated. With a sound in the uterus and a finger in the rectum, or a sound in the bladder and finger in the vagina, some knowledge may often be gained as to the probable amount of thinning present.

As incising instruments scissors, where they can be used, are always preferable, owing to the smaller amount of hemorrhage likely to result from their use.

Membranous dysmenorrhea. Probably the most intractable form of dysmenorrhea is the membranous. A diseased condition of the uterine cavity results in an exaggerated fatty degeneration, immediately beneath the mucous membrane, causing it to be exfoliated in shreds or patches of varying size, but large enough to block the cervical canal and lead to the formation of clots, whose expulsion gives rise to intense suffering. In this condition sterility is almost invariably present. Beyond the general treatment conducive to the highest degree of good health, a great variety of local treatment has been adopted with varying results.

The institution of a healthy for the diseased condition has been attempted by the application of stimulants and

alteratives to the cavity of the uterus. Among other remedies have been used the tinct. of iodine, strong solutions of iodide of potassium, the sulphate and chloride of zinc, persulphate and perchloride of iron, &c., &c. These remedies have also been used in the form of bougies or intra-uterine pessaries, to be crowded into the uterine cavity and thus allowed to melt and medicate the surface. Even the stick nitrate of silver has been introduced and allowed to dissolve and find its own way out. Apart from the severity and apparent rashness of this last treatment, its uncertainty should, it seems to me, condemn it. Should albumen sufficient be present in the uterine cavity, the piece of caustic will soon perhaps become inoperative, being shielded by a coating of coagulated albumen; if not, its effects might be almost or quite disastrously severe.

Solutions may best be applied with the camel hair brush or pencil, although it is a case strongly tempting the medical attendant to use intra-uterine injections. Upon this point, although elsewhere spoken of, I can not forbear to quote from Schrœder, as the advice seems eminently proper. He says of subjects for intra-uterine injections:

"1. Favorable cases must be selected, and those especially avoided which are complicated with any inflammation of the uterus or its appendages. There must be no tenderness in or about the uterus. Old adhesions remaining after inflammatory processes are very undesirable, though not an absolute contra-indication.

"2. There must be a free exit for the injected fluid. This may be obtained by using a nozzle with double canal, but a coagulum may easily stop the current, and hence it is better in every case first to dilate the cervix with a sponge tent.

"3. Only a small quanity of fluid must be injected.

"4. The fluid should be slightly warmed and slowly injected.

"If these precautions are strictly observed, we shall avoid

with certainty all alarming accidents, as well as the uterine colic, so often caused by contraction of the organ upon its abnormal contents.

"Where there is a flexion of the uterus, which will reappear upon withdrawal of the syringe, it is advisable to follow the advice of Haselberg, and draw the fluid back into the syringe at the end of a minute or two. Hildebrandt thinks this procedure dispenses with the necessity of artificial dilation of the cervix."

In the neuralgic and congestive forms of dysmenorrhea, the treatment is:

1st. General.

2nd. Local.

In each of these forms the general treatment will consist in such attention to the general health as may be indicated. For the neuralgic form, tonics, cinchona, iron and the administration of belladonna and muriate of ammonia as for other neuralgias.

A favorite prescription in such cases is the following:

℞ Ammon. muriat., ʒiss. to ij.
Ext. belladonnæ fl., gtt. l. to lx.
Aq. camphor., ℥vj.

M. Sig. Dose a teaspoonful three or four times a day.

In the congestive form, special general treatment may consist of the administration of vin. symphyt. comp., for two weeks, followed by the syr. mitchellæ comp. for an equal time, these being succeeded by the ext. viburni op. fl., often combined with conium or gossypium. While the virtues of cimicifuga have been much lauded in the treatment of this difficulty, I have yet out of very many cases in which I have tried it, at first with faith, always faithfully, to perceive any satisfactory results. Probably however it may be an agent of value in the treatment of the rheumatic form.

Empirically I have often seen the most marked and satisfactory relief follow the use of tinct. of *pulsatilla nigricans*,

in doses of five to ten drops three times a day, notably in the neuralgic and congestive forms. The congestive form is most likely to be relieved by this agent, and persistence in its use for three or four months has often been followed by a complete restoration to health.

In the two forms under consideration the local treatment consists in the introduction into the vagina, every night for two weeks preceding the menstrual flow, of a pessary consisting of a grain of solid extract of belladonna, incorporated with twenty or thirty of cacao butter. It should be carried up if possible so as to melt and apply directly against the cervix uteri. Warm sitz baths are always of good service in the neuralgic form, and sometimes in the congestive form. In the congestive form, if entirely unaccompanied by any obstruction, the warm bath is likely to relieve the severity of the attacks.

The rheumatic form is so called from its amenability to the ordinary treatment accorded to rheumatism. A mixture of the tinctures of colchicum seed, guaiac and cimicifuga, of each equal parts taken in teaspoonful doses three times a day may be used, or such other treatment as the experience of the practitioner has found most serviceable in general rheumatic attacks. In this connection I desire to express my conviction, that whatever plan may be adopted as a basis of treatment will lack much of completeness if it should not provide in some way for the relief of pain.

And finally, in many cases of dysmenorrhea, marriage, when followed by gestation and parturition, has proved a very satisfactory cure.

CHLOROSIS.

The term *chlorosis*, or "green sickness," is the name applied to a condition peculiar to females. In this respect

it differs from anæmia, to which all ages and sexes are liable. It is characterized by a greenish appearance of the skin or a pallor of the countenance. With this symptom are associated usually an impoverished condition of the blood, debility, loss of appetite and spirits, often dyspepsia and usually amenorrhea. While it may occur to women of any age, even after the menopause, it is extremely rare that its attacks fall outside the child-bearing period of life, and by far its most common subjects are young women at the age of puberty.

By Prof. Thomas and some others it is considered to be a neurosis, which supposition would seem to be supported in part by the nervous character of many of its symptoms.

Thus, we have a cœliac neuralgia, headaches, palpitation of the heart, dyspepsia, &c., &c., clearly referable to nervous disorder, while the impaired digestion, the vitiated appetite, the mal-nutrition, may each as well or better be interpreted upon the theory of a nervous lesion as in any other way. Besides this the treatment found most effectual is such as would accord most fully with this supposition.

In accordance with this view, the difference pathologically between *chlorosis* and *anæmia* may be stated in this way: That *anæmia* is a diseased condition of the blood only; while *chlorosis* is an affection of the nervous system, which may or may not be accompanied by a deficiency of red blood corpuscles. Accordingly anæmia is always helped or cured by iron, while in chlorosis this remedy frequently fails.

Causes. The principal exciting causes are believed to be more moral and mental than physical. Profound grief, home-sickness, great and prolonged mental depression or anxiety, and similar powerful mental affections, are among the more prominent and easily recognizable causes.

Symptoms. In addition to those already mentioned,

there is often a depraved appetite, and a craving for indigestible articles like chalk, slate-pencils, clay, &c., &c. Lassitude and indisposition to take exercise are also usually present. A peculiar blowing murmur over the course of the larger arteries may be observed, as in some cases of anæmia. It should not be forgotten that this disease may occur also without material change in the blood.

Treatment. An entire change of air and general surroundings, if possible to be attained, is of first importance. Moderate but not exhausting out-of-door exercise, and bathing, with frictions of the skin and a good nourishing diet should be prescribed.

Sleep at night may be promoted, if necessary, by full doses of lupulin or scutellarin, remedies preferable to the bromide of potassium, if of sufficient potency. The various preparations of iron with cinchona, nux vomica, œnothera and other bitter and vegetable tonics will be found useful. The combination of iron and manganese, recommended in the American Dispensatory under that head, has been found preferable to iron alone in some cases.

CHAPTER XVII.

DISEASES OF THE OVARIES.

General Remarks. The ovaries are two almond-shaped bodies, situated normally between folds of the broad ligament upon each side of the uterus, to the superior lateral angles of which they are attached by two ligaments called the *ovarian ligaments.* These ligaments are chiefly composed of muscular fibers derived from the muscular structure of the uterus. They are also attached to the outer ends of the Fallopian tubes by a ligament.

Their structure is cellulo-fibrous; they are well supplied with blood vessels which traverse their structure, and are surrounded by a sheath or capsule consisting of three layers, an internal vascular, a middle dense and fibrous, and an external serous or peritoneal covering.

From the loose character of their attachment to surrounding viscera it will not be considered strange that their position should be subject to variations. The function of the ovary in a general way, and its necessary connection with generation, has probably been understood for more than 2,000 years, but the present knowledge of the subject of ovulation is of recent date. The ovary to the female is analogous to the testicle to the male; its loss by disease or congenital absence unsexes the individual, who thereupon assimilates more nearly to the male than female type; the voice becomes harsher and deeper, the breasts remain flattened, and at times a scanty beard has been developed.

Variations. Congenitally one or both ovaries may be absent, and an instance has been reported of an individual

having three ovaries, two upon one side; or they may exist in a rudimentary, infantile or undeveloped state, especially in connection with a rudimentary uterus. In *uterus unicornus*, where one cornus of the uterus remains undeveloped, a rudimentary ovary is found on the undeveloped side of the uterus.

The simplest form of imperfect development is that where the Graafian follicles are wanting, in which case the ovary is practically inoperative, these follicles being the strictly sexual characteristic of woman. With however a very imperfect development of the stroma, a few Graafian follicles may be present. The ovaries, as the result of ovulation, are subject to periodical hyperæmia, and with the rupture of the follicles some amount of hemorrhage may take place. Connected with these hyperæmic conditions of the ovary may occur an interstitial hemorrhage, which may be either serious or inconsiderable.

Intra-mural effusions of blood produce sanguineous tumors of the ovary, usually of small size, but occasionally of the size of an orange. These may terminate:

1st. By a gradual dessication and absorption.

2nd. By rupture and escape into the surrounding peritoneal cavity.

3rd. By abscess.

Or the effused blood may at once escape into the peritoneal cavity, causing:

1st. Immediate death from shock and hemorrhage.

2nd. Pelvic peritonitis.

3rd. Retro-uterine hematocele.

4th. An encysted sanguineous tumor in the pelvic cavity.

In case of the formation of sanguineous tumors and hematocele, their sudden development, with symptoms of prostration, and perhaps pain, constitutes the chief diagnos-

tic symptom from other pelvic growths. The escape of blood into the peritoneal cavity, whether resulting in immediate death or pelvic peritonitis, can only be surmised during life.

Absence of the ovaries. The absence of the ovaries becomes a matter of suspicion when, the age of puberty having arrived and past, the individual fails to develop as a woman, but retains her girlish form and manners. There is no attempt at menstruation or indication of the presence of a menstrual molimen. The external organs of generation usually participate in the general lack of development, though in some cases, where it was supposed from other symptoms that the ovaries were wanting, the mons veneris has been found covered with hair, and the vagina and uterus ordinarily developed. In such a case it would seem probable that the ovaries were rudimentary or infantile in development.

Treatment. If the ovaries are entirely absent, of course no treatment can be of avail. Attention to the principles laid down under the head of menstruation will prevent injurious or meddlesome interference, and the positive knowledge that the ovaries were absent could do no more. The knowledge of the fact that the ovaries may be deficient should be reason for adopting the rule never to interfere to promote menstruation, unless some general dyscrasia be present to demand it. The development of rudimentary ovaries may be facilitated by marriage, electricity and a general tonic and stimulating course of treatment.

Variations in position. As might be supposed from the loose attachments of the ovaries to surrounding viscera, they are liable to a variety of congenital or acquired variations in position. We may thus have a descent of the ovary, owing perhaps to relaxation of the broad ligaments,

in which case the ovary will be found in the pelvis, at the right or left of the cervix uteri.

Symptoms. The displaced ovary appears as a more or less sensitive but usually somewhat movable tumor in the right or left side of the pelvis. Owing to its exposed position, distension of the rectum with feces, or the act of defecation, as also coition, may cause severe pain. The sensitiveness is usually increased at the menstrual epoch.

Treatment. The treatment is entirely palliative and expectant. The bowels should be kept in a moderately free condition, and all sources of irritation reduced to a minimum. If the disease be acquired, the general health should be attended to, in the hope that with greater tonicity of the general system the relaxation of the broad ligament may be overcome. The systematic use of electricity may assist in producing this desired result, yet it should be remembered that adhesions may be present which will render the best directed efforts nugatory.

HERNIA OF THE OVARIES.

Hernia of the ovaries is most frequently congenital, and may be single or double. In congenital hernia the descent is accomplished in the same manner as the normal descent of the testicle; a *processus vaginalis peritonei* guides the ovary through the inguinal ring to the loose structure of the labium major. In these cases the ovary is usually the sole tenant of the hernial sac. In inguinal ovarian hernia, the causes may be the same that usually produce hernia, whether inguinal or abdominal. The ovary may in these cases be accompanied by the fimbriated extremity of the Fallopian tube, or even the entire tube, and in some cases the uterus itself. Not only does the ovary descend as an inguinal hernia, but it forms crural, ischiatic and abdominal herniæ, and a case is reported by Kiwisch (Schrœder)

"in which the ovary and Fallopian tube of the right side were forced through the widened vascular canal of the *foramen ovale.*"

Symptoms. In congenital hernia, the tumor is small and irreducible. In acquired hernia the tumor from its liability to contain more than the bare ovary may be larger. The ovary will usually be tender upon pressure, and may often be made out by its size and form. An increase in size and sensibility occurs with each recurring menstruation, and inflammatory symptoms sometimes arise.

Diagnosis. The diagnosis of the presence of an ovary in a hernial sac is rendered more positive by observing, in addition to the symptoms already mentioned, that upon moving the uterus with a finger in the vagina, or a sound in its cavity, that the ovary is drawn upwards towards the point of its exit, thus proving its connection with the uterus.

Treatment. If congenital, its reduction will be impossible. Inflammation, should it occur, must be treated upon general principles. Local cooling and sedative applications, with such internal treatment as the symptoms demand, should be employed. Should suppuration follow, in spite of our best endeavors, the destruction of the ovary will probably result. The pus must be evacuated when formed, and the same treatment adopted which would be applicable to any similar abscess.

If an indisposition to heal should arise, the cavity may be syringed out with solutions of sulphate or chloride of zinc, the permanganate of potash, carbolic or pyroligneous acids, infusions of hydrastis or hamamelis, and similar preparations, of strength according to the best judgment of the practitioner.

In case of cystic degeneration, or unendurable pain, the removal of the ovary has been practiced with both favorable and fatal results.

Ordinarily the patient should wear a concave shield or protection against external injuries. In acquired hernia, herniotomy may be practiced as in ordinary herniæ, and the prolapsed ovary returned to the abdominal cavity, should circumstances arise demanding it, such as great painfulness or a tendency with portions of the intestine to strangulation. Where it is reducible, the application of a truss, of proper design according to the case, may be made, to retain the ovary in the abdominal cavity.

HYPERTROPHY OF THE OVARY.

An enlargement of the ovary may occur as one of the possible results of chronic inflammation. It would seem quite as likely to follow the congestion produced by long continued excitation of the sexual organs. The inter-trabecular effusion of lymph, also a possible result of inflammation, and the accompanying hardness and enlargement of the ovary can not be considered a true hypertrophy, but only those cases in which the nutrient materials, brought to the ovary by the blood, produce increased nutrition with increased development of the *stroma*.

In these cases the destruction of the Graafian follicles is likely to ensue, hence the result morally and constitutionally is the same as that of atrophy; ovulation ceases, sterility is produced, and a general unsexing of the individual follows.

The ovary is found upon *post mortem* examination to be enlarged to two, four or even six times its natural size, presenting however no indications of malignant disease.

Symptoms. The rational symptoms are not well defined. Owing to increased weight the ovary probably will descend, and by pressure upon the bladder or rectum, may cause symptoms of disorder in the functions of those organs.

Possibly too a dragging pelvic pain or aching may be expected in cases of extensive hypertrophy.

The physical symptoms are more prominent. Vaginal or rectal examination will probably disclose the enlarged, somewhat sensitive organ, at the side of or below and behind the uterus, and in cases favorable for such examination the enlarged ovary, even in normal position, may be made out by bi-manual examination. Its increased size and sensibility during the menstrual epoch, still further aids in diagnosing the difficulty.

Treatment. The persistent use of iodine externally and internally promises most in treatment. The well known fact that the free or over use of iodine may produce atrophy of the testicles and mammæ, would point suggestively to its employment for the reduction of an enlarged ovary. The compound tincture of iodine should be applied externally. Thomas advises the use of preparations of iodine to the walls of the vagina. The following prescription will be found useful as an internal means:

℞. Ext. viburni op. fl., ℥ iijss.
Ext. conii fl., ℥ ss.
Potass. iodid., ℥ ss.
Syr. acaciæ, ad ℥ vj.
M. Sig. Dose a teaspoonful three or four times a day

The general treatment will consist in sustaining the general health of the patient, and removing so far as possible all predisposing causes, especially sexual excitement.

APOPLEXY OF THE OVARY.

By apoplexy of the ovary is usually understood the rupture of some of its blood vessels, and consequent hemorrhage into its structure.

The ovary presents the singular and anomalous spectacle of an organ, in whose physiological action blood vessels are periodically ruptured in the maturation and escape of

the Graafian follicles. What the normal amount of that hemorrhage may be we have no means of ascertaining, some authors maintaining that a large proportion of the menstrual blood comes from this source, and that during the entire period of ovulation and menstruation, the fimbriated extremity of one of the Fallopian tubes is applied to the site of the escaping ovum, to conduct it and the effused blood to the uterus.

Such a theory, and it is nothing more, appears to me cumbersome. We know that the uterus supplies menstrual blood, and to suppose that the consequences of intra-peritoneal hemorrhage are only warded off each month by the exact coaptation of the Fallopian tube to a constantly varying point upon the ovary, is to hang life and health by a too slender thread. The ordinary size of the Fallopian tubes would appear insufficient for the transmission of a large amount of menstrual fluid, so that it would seem that the amount of blood lost by the ovary was incidental and inconsiderable.

That a certain amount of hemorrhage should occur is inevitable, and its trace is left behind in the *corpus luteum*. If from any cause the *tunica albuginea* fails to be ruptured with the rupture of the mature follicle, an imprisoned hemorrhage may occur and a sanguineous tumor of the ovary will be formed, limited in size only by circumstances. In prostrating fevers, or in hemorrhagic states of the system as *anæmia*, *purpura*, &c., the amount may be considerable, and a tumor be thus developed. Should this tumor at length rupture, a pelvic hematocele will result.

Symptoms. A dull, heavy aching pain in the affected ovary, with sudden enlargement, sensitiveness and general prostration, the previous health having been good, may be enumerated among the symptoms likely to attend ovarian apoplexy. Its diagnosis can rarely if ever be made a certainty during life.

Treatment. Little can be done beyond keeping the patient at rest, and promoting her general comfort. The most common termination is fortunately a gradual inspissation and absorption of the effusion. Should rupture into the peritoneal cavity take place, the resulting peritonitis must be met as best it may by the ordinary treatment for peritonitis. If abscess of the ovary results, its evacuation through the vagina by means of aspiration, or with a fine trocar, will be necessary, treating the other symptoms as they may occur.

OVARITIS OR OÖPHORITIS.

Inflammation of the ovary may be puerperal or non-puerperal. The non-puerperal form, which only concerns us here, is either *acute* or *chronic.*

Acute ovaritis. Acute ovaritis, or inflammation simply of the ovary, is a disease of such exceeding rarity that few persons have ever seen a case. Indeed such great uncertainty surrounds the subject, that one might but for the theoretical ground that all structures of the body may be attacked by inflammation, almost deny its existence *per se.* In connection with inflammation of contiguous structures it is more frequently met with, and in these cases of inflammation of the ovary and surrounding peritoneum, the minds of pathologists have been much vexed to determine whether the original disease was ovarian or peritoneal. Autopsies usually show a collection of pus in the peritoneal cavity, surrounding an ovary whose stroma has become but a mass of pus, and in many cases are also found adhesive bands connecting the abdominal viscera. The ovary is subject to great circulatory changes monthly; subject too to traumatic influences connected with the rupture of each Graafian vesicle; subject undoubtedly to a considerable congestion during

sexual excitements; and theoretically, if such an organ be not subject to inflammations, it would be hard to assign therefor a reason. Indeed I should suppose it peculiarly liable, and it would seem to me probable, that inflammation of the ovary once established might readily spread to the peritoneum, and thus by presenting during life and after death the symptoms common to peritonitis, leave the enquirer in doubt which was the original affection. The question is however more theoretical than practical.

Symptoms. Never having to my knowledge seen a case of non-puerperal acute ovaritis, I ought not perhaps to take exception to what others have said. In the puerperal form, which I have several times seen and by autopsy verified, the disease is ushered in by a slight chill, so slight as to be at times considered unimportant but for the marked but not high grade of fever following it. Emphatically there is no pain or tenderness upon pressure over the affected ovary. Succeeding days bring more chills and fever, but without the regularity of malarial attacks, for which the physician, finding no tenderness, pain or swelling at any point, may be led to take the case before him. And it is not usually until the fourth to the tenth day that any pain is produced by pressure upon the affected ovary.

A day or two before this perhaps conjoined manipulation will detect an enlarged ovary, or if the abdominal walls be thin, the suspicion of an enlargement in one ovarian region may be entertained. Tenderness and pain upon pressure are in this case only felt after the peritoneal covering of the ovary becomes affected, and then the amount and severity of both are gauged by the extent of the peritoneal inflammation.

In the puerperal state acute ovaritis is not a painful affection; I have seen a patient die from this cause without ever for one moment locating a pain, and I can see there-

fore no reason to suppose that pain is a symptom of non-puerperal ovaritis. So long therefore as the inflammation is parenchymatous or follicular, we shall get no pain, and have no symptoms to guide our diagnosis except the chills and fever. Hence the disease will seldom be diagnosticated, but may undoubtedly under expectant treatment end in recovery, without either patient or physician having had the remotest idea what was the matter.

But with the invasion of peritoneal inflammation, the following symptoms as given by Thomas are undoubtedly accurate. He says: "The symptoms of this affection are so intimately associated with peritonitis and cellulitis that it is impossible to separate them. There is severe pain in one or other iliac fossa, with increase of heat, fever and perhaps chill. Pressure shows the most exquisite sensitiveness, and when the part is examined by conjoined manipulation this is excessive." In the non-puerperal as in the puerperal form, ovaritis may accompany or follow peritonitis, and the question of priority of part affected would be settled by learning whether acute pain with tenderness upon pressure came simultaneously with the first chill, or supervened after perhaps several days.

Termination. Ovaritis may probably terminate in four to six days by resolution, or later by abscess. It is believed that one result which may follow upon parenchymatous or follicular ovaritis, is destruction of the Graafian vesicles and subsequent sterility.

Diagnosis. From what has been heretofore stated, it will follow that the diagnosis is well nigh if not quite impossible. When however associated with peritonitis, the distressing pain and great tenderness over the affected region, with febrile disturbance and general increased heat, may lead to such a critical examination as to enable the

medical attendant to discover an enlarged and in that case sensitive ovary. In simple ovaritis without peritonitis, under favorable circumstances it is probable that conjoined manipulation would discover the enlarged ovary.

Treatment. The treatment will be such as should be adopted in a case of peritonitis. Special sedatives to reduce the force of the circulation, with opiates to mitigate the severity of the pain. As the danger of destruction of tissue is perhaps directly proportioned to the increase of temperature above that of health, means for its reduction should be adopted. For this purpose I know nothing equal to the administration of *salicine*, in doses of five to ten grains every two or three hours, the quantity and time being regulated by the urgency of the case, or in other words by the degree of heat present. Externally, fomentations of hops, lobelia, stramonium, &c., &c., sprinkled with turpentine, should be constantly applied. Further than this the treatment must be governed by circumstances.

Abscess of the ovary may follow inflammation, of which it is a frequent termination. It may also follow or be the result of tuberculous degeneration of the ovary. When following inflammation, the formation of pus may be suspected by the irregular chill, flushes of fever and cold sweats, which usually indicate suppuration. Abscess has been known to seek an outlet spontaneously into the bladder, the rectum, and it may point externally or break into the peritoneal cavity.

A scrofulous diathesis constitutes a predisposing cause to ovarian abscess. When not an immediate sequence to acute ovaritis, the diagnosis will be difficult, and it may be mistaken for an ovarian cyst, ovarian pregnancy or tubal dropsy. Even if a portion of pus be withdrawn from a supposed ovarian abscess, it is not possible to assert that it

is not from a suppurating ovarian cyst. The history of the case showing that the possible causes of abscess have been in operation, and the rapidity of its formation, are circumstances rendering ovarian abscess probable. In case of the probable formation of pus, it should be facilitated by warm fomentations over the affected region. When indications of pointing in the vagina, rectum or externally present, evacuation should be effected with the aspirator or a fine trocar, the cavity being syringed out after a time, should the discharge tend to become perpetual, with solutions of pyroligneous or carbolic acids, permanganate or sesqui-carbonate of potash, or sulphate, chloride or bromide of zinc.

CHRONIC OVARITIS.

Accompanying many uterine disorders will be observed a pain occupying the region of one or both ovaries. By some this has been improperly supposed to be caused by a chronic inflammation of the ovaries. That however true chronic ovaritis may and does exist, there can be no doubt. Its presence can only be positively determined by attention to the following symptoms:

1st. A dull aching pain, not necessarily severe but perhaps more an unpleasant sensation, occupying with great constancy the position of an ovary.

2nd. Increase in the prominence of this symptom with each menstruation.

3rd. The detection by the rectal or vaginal touch, aided perhaps by conjoined manipulation, of the ovary, enlarged and somewhat sensitive.

4th. Observation that at the time of menstruation the ovary is yet more enlarged and sensitive.

Prognosis. Favorable.

Treatment. Externally, inunction with the iodide of potassium, for which purpose the following is a desirable formula:

℞. Potass. iodid., ʒ vj.
Aq. font., ʒ iij.
Solve et adde
Axung. porci, ℥ ij.
M. Ft. unguentum.
Sig. Apply with friction night and morning.

Instead we may apply the tinct. iodini comp. night and morning, until soreness and irritation of the skin is produced; then limit the applications to the point in frequency that they can be borne without excessive inconvenience. Internally, the viburnum, aletris, conium and similar remedies, with such general treatment or combinations as the circumstances may seem to indicate. Mentally and physically the patient should be kept as far as possible from undue sexual excitement.

CHAPTER XVIII.

PELVIC AND OVARIAN TUMORS.

The most natural division of these pelvic growths is into the two general classes of

1st. Solid.
2nd. Fluid.

Although common usage sanctions the use of the term "tumor," as applied to a class of growths whose contents and principal bulk are fluid, the term should in accuracy be applied only to solid growths, the so-called fluid tumors consisting simply of a sac and its connections with the surround-

ing viscera, whose fluid contents constitute perhaps nine-tenths of the entire mass.

The solid tumors of the ovary are classified into :

1st. Enchondroma.
2nd. Osteoma.
3rd. Carcinoma.
4th. Papilloma.
5th. Fibroma.

As indicated by the names, "*enchondroma*" means a cartilaginous growth or structure, "*osteoma*" a bony or ossific structure. These two forms of tumor are so rare that mere mention of their possible existence is all that need be made here. They are always adventitious growths appearing in the body of some preëxisting growth.

That *carcinoma* is more rare than some have supposed, is evident from the fact that Dr. Charles Clay found but six cases in five thousand, or one in 833.33 cases by him examined. Carcinoma most frequently effects both ovaries simultaneously.

Papillary tumors take their origin from a corpus luteum, are seldom larger than a pea, and seldom produce symptoms during life betokening their existence, although ascites, and even umbilical hernia have been thought to be induced by this derangement.

Fibromatous tumors may take their origin in a corpus luteum, or from the stroma of the ovary direct. The latter class is of chief interest, the tumor attaining at times the size of a cocoa nut. Both ovaries may be at the same time affected, the disease in any form being rare. Spencer Wells reports a case in which calcification of portions of such a tumor had taken place.

It has been questioned whether solid or fibrous tumors of the ovary ever attained a size that would make operative proceedings for their removal a necessity or justifiable. In

the light of present knowledge it would seem that such a proceeding may occasionally become necessary, and this too independently of their size, as when attacked by gangrene from twisting of their pedicle, or when injured during labor so seriously as to cause their disorganization.

Of cystic tumors of the ovary Peaslee makes the following classification:

1st. Hydrops folliculorum.
2nd. Dermoid cysts.
3rd. Cystoma ovarii, { Struma, Oligocysts. Polycysts.

Besides these we have of extra ovarian cysts:

1st. Cysts of the Wolffian body.
2nd. Cysts of the broad ligament.
3rd. Cysts of the Fallopian tubes.
4th. Cysts developed from aberrant ova.

Extra ovarian cysts. In operations for ovariotomy and in *post mortem* investigations, exposure of the broad ligaments frequently brings to view a small vesicular body, attached to the terminal bulbs of the Wolffian body, or to the broad ligament. The walls are very thin and delicate, its pedicle often slender, and the contents a thin transparent or colorless serum. In size these cysts may vary from that of an ordinary marble to that of a hen's egg; owing to the tenuity of their walls they are frequently ruptured or their pedicle is twisted off, without any antecedent trouble having been manifested.

Occasionally the development of a fibrous coat prevents their rupture, and attachment to some portion of the broad ligament produces the cystic tumor of the broad ligament, which may attain a very considerable size. The fluid contained in these cysts of the broad ligament is usually clear and transparent like water, and devoid of albumen. Their

complete disappearance after tapping, and the evacuation of their contents, is often a happy result, and has doubtless led to the supposition that an "ovarian tumor" had thus been easily cured.

The contents of these cysts may be removed by spontaneous absorption, an example of which is reported by Prof. Thomas in the Med. Record for May 18, 1878. In this case an interval of something like two years elapsed from its first discovery to its disappearance. The fluid contained in these cysts is so bland and unirritating in character, that if the thin cyst walls be ruptured, as may take place in examination, no very serious consequences as a rule occur.

Owing to the fact that at ovulation the liberated ovum may not in all cases find its way into the Fallopian tubes, it has been supposed that a sufficient amount of vitality may remain in it to in some cases form an attachment to some point of the peritoneum, where for a time it may increase in size, forming one of those small serous tumors or vesicles occasionally discovered.

OVARIAN TUMORS.

The *hydrops folliculorum*, or follicular dropsy, is apparently caused by the exaggerated development of the ovisac. They are the most unimportant of all ovarian growths, and although developing usually no symptoms during life to betray their presence, they are frequently found after death. In size usually no larger than a cherry, they may attain the size of a child's head, and are most usually found, according to Peaslee, co-existing with intense catarrh of the sexual organs, or *metrorrhea;* and it might justly be termed a "*catarrh of the ovaries.*"

Dermoid cysts. The occurrence of dermoid cysts of the ovary is sufficiently common to be of interest, and demand

attention. These formations consist of a cyst, whose internal lining possesses the characteristics of common integument. Underneath this cuticle are found a layer analogous to the cutis vera, and a fatty layer upon which is based the external connective tissue of the tumor. Their epithelial lining is so true a representation of ordinary integument as to contain well-developed hair bulbs, sudiparous and sebaceous glands and even papillæ, not however so numerous or regularly developed as in ordinary integument.

The contents of the cyst consists variously of a fatty emulsion-like mass, the product probably of the cast-off excretions of the sebaceous and sweat glands; cast-off epithelial scales; hair, bones, even teeth, and in some cases brain substance and striated muscular fiber.

Formerly these cysts were supposed to be connected with an imperfect fetation, to be a sort of pregnancy by inclusion; but this is hardly consistent with the fact that of teeth, the most common foreign structures found in these cysts, no less a number than three hundred were found in one cyst by Paget, teeth enough for a great number of children.

Perhaps the latest belief concerning these tumors is expressed by Schrœder as follows: "His at first entertained the view that the Wolffian duct was formed by a folding in of the horny layer; but this view, which was again advocated by Hensen, was afterward discarded. Very recently His has modified his views, in which modification Waldeyer concurs, so that they now believe that the first rudiment of the genital organs is developed from the axial cord of His, in the formation of which the upper germinal layer participates; and that the horny layer contributes also chiefly to its formation. From this we can understand how formations of the external skin can originate from parts of the upper germinal layer which have not

contributed to the formation of the ovary, and how fat, bones, teeth, &c., can be produced from parts of the middle germinal layer, which also participated in the folding in of the axial cord."

In this connection it may be mentioned that many other portions of the body furnish dermoid cysts, even the lungs, but the testicles furnishing the next greatest number after the ovaries.

In size dermoid cysts of the ovary are usually small, no larger than the fist, but instances have been known of their attaining a considerably larger size. Their growth after a time seems to become stationary, ascites being sometimes developed; at other times an ulcerative process is established, and the contents of the cyst may be extruded through the abdominal walls into the bladder or intestines, &c., giving rise doubtless in some cases to the belief that an abdominal pregnancy has thus terminated.

Cystoma ovarii. To this class belongs the very large majority of those ovarian growths which demand surgical interference. Ordinary ovarian cystic enlargements consist of one or more cysts, adherent and intimately connected. To the single cyst is attached the term *monocyst;* the growth embracing a few cysts is called an *oligocyst,* from *oligos,* "few;" and where the cysts are very numerous in any individual ovarian enlargement, the mass is called a *polycyst.* The chief early contents of these cysts is a highly albuminous fluid of a yellow, amber color, which is termed with reference to its character *colloid;* as the cysts advance in development and age this becomes more fluid, and contains a large proportion of adventitious substances, the products of secretion and exfoliation from the cyst walls, among which may be enumerated free cells and nuclei, cholesterin, blood cells, fatty matter, &c., &c. In size they range from very small to a size only limited by the capacity

of the surrounding abdominal muscles to give way before and yet contain them, and cysts have been found, according to Peaslee, containing no less than ten gallons, and measuring four feet in circumference. Monocysts present an even and rounded contour, oligocysts differ but slightly in this respect, while polycysts present a lobulated shape from the apposition of the different cysts and their dividing septa.

The general constitution of the cyst wall may be described as consisting of three distinct layers, occurring from without inwards in the following order:

1st. Peritoneal.
2nd. Middle or proper layer.
3rd. Epithelial.

The peritoneal layer is dependent for its extent and regularity upon the mode of development of the tumor. Mental reference to the anatomical surroundings of the ovary will show that the posterior and superior surfaces of the ovary are not clad with peritoneum; hence so much of the ovarian cyst as owes its early development to that portion of the ovary will be without peritoneal covering, while development from the anterior surface of the ovary with the investing folds of the broad ligament will result in a peritoneal covering for the cyst.

The absence of peritoneal covering will be denoted by the lack of vascularity in appearance, and its greater whiteness; the presence of a considerable number of veins more or less well developed is evidence of the presence of peritoneum.

The *middle layer* consists of the original *tunica albuginea* of the ovary, enlarged and hypertrophied. In thickness and vascularity this layer differs not only in different cysts, but in different locations upon the same cyst, being much thicker and more vascular in oligocysts. Inflamma-

tory action commencing either here or in the peritoneal layer, may produce great changes in the appearance and constitution of the layer.

The *internal or epithelial layer* is of variable thickness, being at times little more than a layer of cells. It is from this layer that the contents of the cyst are secreted, and the removal of this layer, by peeling it off as the rind of an orange may be removed, constitutes the operation of "*enucleation*," which was advocated and practiced first by Prof. Miner, of Buffalo, N. Y., as a means of treatment where the adhesions were so extensive and vascular as to preclude removal in the ordinary manner.

Of the color, characteristics and quality of the contained fluid. The contents of ovarian cysts are subject to great variations in all respects. In color every gradation presents from an almost clear transparent limpid fluid to a dark brown grumous or almost inky mass. Monocystic fluid belongs usually to the clearest and lightest class, but after tapping the subsequently secreted fluid becomes darker and browner, often resembling strong coffee intermixed with occasional flocculent masses. The admixture of blood from some blood vessels wounded in tapping, or where the tumor has grown to an enormous size before tapping, the rupture of blood vessels may cause the dark brownish appearance.

It is also the common color in polycysts, in which also in the same tapping a variety of colors may present from the rupture of the various adjacent cysts into the one first tapped. In the case however of a polycystic tumor upon which I operated recently in the Bennett Medical College Hospital, the contained fluid resembled thick starch in general appearance and consistence; it was tenacious and flowed through a large canula very slowly; after standing in a bottle for one or two days, a dense whitish deposit settled to the bot-

tom, the supernatant liquid being quite clear and transparent.

The *specific gravity* of cystic fluids ranges from 1007 to 1033, averaging perhaps 1022.

The *quantity* may be enormous. Thus fifty, sixty, eighty and one hundred pounds have often been reported, and Peaslee reports having taken from the monocystic tumor of a patient, twenty-two years of age, "one hundred and forty-nine pounds and a fraction," while in the same connection, mention is made of a case in which Dr. Kimball, of Lowell, in an operation for ovariotomy, "drew off one hundred and sixty pounds from a polycystic tumor and still left more than twenty pounds, as he could not complete the operation;" and Kiwisch is authority for saying that one hundred tappings have been undergone, in which several thousand pounds of fluid were evacuated. Mr. Martineau, of Norwich, England, removed from a patient nearly five hundred pints in one year, and in twenty-five years, by eighty tappings, were removed sixty-six hundred and thirty-one pints, which equals thirteen hogsheads of fluid.

Origin of cystomata. While the idea has been entertained, that the ovarian cyst was simply a degenerated ovary, pathologists are at present quite universally agreed, that ovarian cystic disease consists in an abnormal development of one or more Graafian vesicles. From some cause the vescicle fails to rupture at the proper time, and with increased secretion there is a hypertrophy of its containing walls.

It is also believed that originally the type of the disease is oligocystic in all cases, becoming monocystic by the fusion of the smaller and weaker cysts with the larger and stronger. Both ovaries may be affected, but it is uncommon to find them in equal stages of development. The polycyst is produced when the number of cysts is increasing, and is called a proliferous cyst. The manner in which new cysts are de-

veloped appears to be from the prolongation of numerous papillæ lining the cavity of a small cyst, until those of opposite sides meeting each other fuse, and thus divide the space indefinitely, each new division becoming a cyst.

The colloid contents are believed to be an excretion of the epithelial cells constituting their lining. Where the papillæ are not numerous or vigorous in their growth, atrophy of the cyst wall may take place, resulting thus in the fusion of the collection of cysts into one.

Struma ovarii from its great infrequency need hardly be mentioned, and it is sufficient to say that it is a form of cystic disease which would be best understood, by representing it as a cyst somewhat larger than a man's fist, itself made up of an almost innumerable number of smaller cysts, which seen through its transparent wall give it a honeycomb appearance. The largest of the contained cysts are those near the center of the mass.

Causes of cystoma. A great variety of causes, most of them hypothetical and many of them fanciful, have been assigned for the production of ovarian cysts.

Thus anæmia and ill health, by not affording a sufficiently vigorous congestion of the ovary at the period of ovulation, to insure the proper rupture of the Graafian vesicle, have been considered causes of their formation. Child-bearing and sterility, disappointed and unrequited love, unsatisfied sexual desires, and excessive coition are among the causes which have been advocated.

If it be conceded as true that sterile women are more liable to ovarian cysts, the entire significance of the fact may be that the sterility is itself but the symptom of an ovarian derangement, which ultimately terminates in cystic disease.

No age is entirely exempt, but the age between twenty and forty, or the age of greatest sexual activity, furnishes

the larger portion of the cases. Blows, injuries to the pelvic viscera, violent exertions, etc., etc., have been assigned as causes.

But one point in all may be considered as determined. The ovarian cyst proceeds from a derangement in the formation of the Graafian vesicles, and any cause capable of producing that particular derangement, will prove a cause for the formation of cysts. Hence the causes may be many, but with our present knowledge we have no means of guarding against them.

Duration. It seems probable that from the time of discovery, the average duration of ovarian tumors before fatal issue, will not much exceed two years. Exceptional cases of rapid and slow development occur, and the influence of tapping is to prolong life. Instances have occurred in which as heretofore stated, successive tappings have been undergone for more than a score of years.

But it will not do to base our expectations of a case upon such records, as we shall usually find that the patient will from a gradually increasing debility, or some intercurrent inflammation succumb, after from three to eight or ten tappings, and if we remove from forty to fifty pounds of fluid at a tapping, we need not be surprised to see the quantity duplicated in two or three months. The refilling of some cysts is however much slower, so that I have seen an interval of more than three years occur between necessary tappings.

Symptoms. The symptoms may be divided into the two classes of *rational* and *physical.*

Rational symptoms. Normally it does not appear that pain is an early symptom, although sometimes present. When it exists, it is probably due to some inflammatory process, possibly too unconnected with the tumor. While small and resting within the pelvis, pressure upon the blad-

der may produce the usual symptoms connected with that condition, chief of which are dysuria and inability long to retain the urine.

Pressure too upon the uterus may produce congestive dysmenorrhea, or by causing flexion the mechanical form of painful menstruation. Otherwise menstruation may not necessarily be interfered with, so long as one ovary remains unaffected.

At this time too, often but not necessarily appear some of the early signs of pregnancy, as morning sickness, enlargement and tenderness of the breasts, and discoloration of the areola surrounding the nipple, and even the secretion of milk. With such symptoms, should menstruation be absent, the strong presumption of pregnancy would necessitate a painstaking investigation to determine the true condition.

As the tumor increases in size and rises out of the pelvis, the same pressure upon the bladder continues; one side of the abdomen appears larger than the other until after the cyst rises above the umbilicus, and dragging pains and feelings of uneasiness, from tension upon the Fallopian tube and broad ligament, come on.

A still further increase in size at length produces pressure upon the stomach, the intestines, the diaphragm, the heart and lungs; and we thus have the vital processes of digestion, circulation and respiration interfered with. Necessarily the general health begins to fail, the abdominal walls are thinned, both sides appear about equally distended, menstruation is often from the first disturbed and perhaps ceases, and emaciation of the neck and face produces what has been described as the "*facies ovariana.*"

The superficial abdominal veins of the affected side especially, as well as those of the corresponding limb, become enlarged, prominent and tortuous; œdema may be

present, ascites occasionally comes on, and possibly entire retention of the urine, the secretion of which has been gradually failing. At last irritability of the stomach and bowels, irregular or rapid action of the heart, distressing dyspnœa and hectic fever declare the end imminent.

These symptoms occur earlier in polycysts than in oligocysts, and may demand operative interference before the size of the tumor would otherwise seem to indicate its necessity. Attacks of sharp cutting pain, with tenderness upon pressure and febrile reaction, are indications of the formation of adhesions, and when occurring in the past history of a case will lead us to anticipate their formation; but quite extensive adhesions may occur from long-continued pressure, without sensible evidence of inflammation, as I have more than once seen exemplified.

Their physical signs and diagnosis. Their diagnosis from the physical signs is effected by:

1st. Inspection.
2nd. Mensuration.
3rd. Auscultation.
4th. The vaginal and rectal touch.
5th. Conjoined manipulation.
6th. The uterine sound.
7th. The hypodermic syringe or the aspirator, and the examination of fluids thus withdrawn.
8th. Changes in the position of the patient.

To conduct this examination the patient is placed upon the back, with the thighs flexed so as to take off all strain upon the abdominal muscles.

By *inspection* the shape, size and general appearance of the abdomen are learned. The prominence or recession of the umbilicus and the degree of enlargement of the cutaneous veins are noted.

By *mensuration* the size of the abdomen, the relative

distances between the ensiform cartilage and umbilicus, and between the umbilicus and the pubic symphysis, the points of greatest and least girth of the abdomen, also the relative extent of the area of dulness upon percussion on the affected and unaffected sides.

By *palpation* the contour of the tumor and its monocystic or polycystic character, its mobility and probable freedom from or complication with adhesions, are sought to be made out.

By *percussion* the fluidity or solidity of its contents is often determinable, and the various situations of areas of dulness or clearness upon percussion accurately determined.

In the early stages the *vaginal* and *rectal touch* are often important in determining the locality and sometimes the character of the tumor, as well as the uterine displacement effected by it. In the more advanced stages it is not uncommon for the cyst to rise beyond the reach of the vaginal touch, although adhesions to the pelvis may hold it down.

Conjoined manipulation is of assistance in determining its movability, size, shape, &c., &c.

The *uterine sound* determines the direction taken by the uterine cavity, its depth, and the movability of the uterus independent of the tumor, thus separating an ovarian tumor in its earlier stages from a sub-peritoneal fibroid.

The *hypodermic syringe* or a very fine *aspirator-needle* furnishes the most safe and accessible means for abstracting a portion of the contents and demonstrating the solid or fluid character of a growth. Should the contents be so viscid and gelatinous that it is impossible to abstract any portion through so fine a tube, freedom of lateral motion while the tube is in the tumor would nevertheless demonstrate its lack of solidity. The character of the abstracted

fluid, its color and the presence or absence of albumen should also be noted.

In the earlier stages, *changes of position* of the patient will show the degree of mobility present, and the changes in position of the areas of dulness and clearness upon percussion thus made apparent, are often significant as indicating the probable length of the pedicle and the presence or absence of attachments.

What we shall usually find by these means in a case of ovarian tumor. First we learn in the history of the case that, from six to eighteen months ago, a tumor or bunch of the size of a hen's egg was felt in either the right or left iliac region. It was for a long time, and if not too large is now, quite freely movable, and caused little or no inconvenience until latterly. The symptoms mentioned under the head of rational symptoms have been present.

At length the size of the tumor has become so great as to reach the epigastrium, and the patient is as large or larger than would ordinarily be observed at the ninth month of utero-gestation. We are no longer able to observe any difference in the size of the two sides of the abdomen; the walls appear tense and thinned, the veins enlarged, the umbilicus is prominent, and the pulsations of the abdominal aorta are transmitted through the cyst.

Percussion shows the presence of a fluctuating mass occupying apparently nearly the whole abdominal cavity. There is dulness upon percussion about the region of the umbilicus, because the cyst lies in front of the bowels; according to the size of the cyst, the area of this dulness may reach from the symphysis pubis nearly to the ensiform cartilage. Laterally however we find between the posterior portion of the crista ilii and the lower ribs, and quite well back towards the spinal column, clearness upon percussion on both sides.

Measuring from the umbilicus, this area may extend a little higher upon the unaffected side, but a change in position by changing the position of the cyst will cause corresponding changes in the location of these areas.

Mensuration will probably but not necessarily show that the distance from the anterior superior spinous process of the affected side to the umbilicus is slightly greater than upon the opposite side.

The greatest circumference of the abdomen will be one or two inches below the umbilicus; in ascites the greatest girth is usually at the umbilicus.

From the ensiform cartilage to the umbilicus will measure an equal distance, or one to three inches less than from the umbilicus to the symphysis pubis, instead of an inch more as is usual, and the umbilicus, which is normally about on a line with the superior border of the crest of the ilium, will be found higher up.

Auscultation, from failing to disclose the beating of a fetal heart, will exclude pregnancy, but may disclose a sound analogous to the "placental sound" in uterine fibroids, but never in ovarian cyst (Simpson).

In the earlier stages the vaginal touch shows a fluctuating tumor anteriorly upon the affected side; later perhaps nothing except the lateral displacement of the uterus, also evidenced by the uterine sound. But a cyst from a polycystic growth may descend into the pelvis, and crowd the uterus backward and upward beyond the reach of the exploring finger.

The *hypodermic syringe* discloses the fluid contents of the tumor, which proves to be a more or less dark-colored and opaque albuminous fluid, but non-coagulable.

Microscopical examination discovers the presence of no amœboid bodies, but probably what has been designated as the "ovarian glomerulus, looking like a small distended

cyst containing a great number of little nuclei of various sizes, will be present. The value of this last indication is not definitely established.

Differential diagnosis. Chief among the difficulties simulating ovarian cyst and requiring to be differentiated from it are:

1st. Ascites.

2nd. Pregnancy, normal, extra-uterine and in conjunction with ovarian cyst.

3rd. Enlargement of the uterus from contained gases, fluids or moles.

4th. Uterine fibroids or fibro-cysts.
5th. Encysted peritoneal dropsy.
6th. Cysts of the broad ligament.
7th. Renal cysts.
8th. Splenic cyst.
9th. Hepatic cyst.
10th. Fecal tumor.
11th. Pelvic abscess.
12th. Distended bladder.
13th. Hematocele.
14th. Excessive obesity.
15th. Tympanites.
16th. Phantom tumor.
17th. Fatty tumors of the omentum and mesentery.
18th. Cancer.

Differential diagnosis from ascites. Upon inspection in both ascites and ovarian dropsy, the abdomen is found enlarged, in large ovarian cysts the enlargement like that in ascites is general, while small cysts produce more a local enlargement. In shape however the ascitic abdomen protrudes at the flanks, with a tendency to umbilical flattening. Changes in position work a more marked change in shape

in ascites than in ovarian cysts, owing to the freedom with which the ascitic fluid can move.

In ovarian cyst alone the navel although flattened, is never prominent as it may be in ascites, with or without an ovarian cyst.

Prominence of the abdominal veins is only of a presumptive value when greater prominence exists on one side than the other.

Percussion in ascites gives a clear sound in the umbilical region, or at the highest point of the abdominal cavity, owing to the floating of gas-distended bowels at that point. Alternate elevations of the shoulders and hips, or lying upon either side produces corresponding and self-evident changes.

It should be observed that if the shoulders are but slightly elevated, the area of dulness may raise from the symphysis pubis as high as the umbilicus, thus making it possible without such observation to mistake ascites for ovarian cyst. In ascites the fluid always seeks a hydrostatic level, and at any point below where clearness ends and dulness begins, deep seated pressure will displace the fluid, and the clear resonant sound of the intestines will be procured.

The chances for error in this proceeding are that:

1st. The quantity of ascitic fluid may possibly be so large as to raise the abdominal walls up away from the intestines bound down by their connections or acquired adhesions, thus giving umbilical flatness on percussion in ascites.

2nd. From previous tapping or communication with a fold of the intestines, the ovarian cyst may have acquired air or gas and thus become resonant.

Such cases must be very rare, and the g neral condition of the patient may easily counterbalance any doubts thus raised. Ascites will be preceded by ill health or some caus-

ative dyscrasia usually discernible; this will be absent in the history of the ovarian difficulty.

In ascites the face will be full, puffy and doughy, and œdema of the extremities and finally of the abdominal walls will present, while in ovarian cyst the œdema only of the extremities, comes if at all at the last, and emaciation of the neck and face, the *facies ovariana*, will be present; in *ascites* aortic pulsation is not felt through the abdominal walls, the floating ribs do not bulge, anæmia is early present, hydragogues and diuretics produce temporary relief, the enlargement is most perceptible in the erect position, the uterus if displaced is crowded downwards in the pelvis, the fluid is straw colored, coagulates spontaneously and contains amœboid corpuscles; while in ovarian cyst aortic pulsation is felt through the abdominal wall, the floating ribs bulge, hydragogues and diuretics produce little effect, the enlargement is most marked and prominent in the recumbent posture, the fluid is darker, non-coagulable and contains no amœboid corpuscles.

Diagnosis from normal pregnancy. It is safe to always assume pregnancy to be present until disproved. Neglect to observe this precaution has caused the death of several patients, in whom a gravid uterus has been punctured with a trocar, and caused the cutting open of others, to learn what should and would now by any prudent or qualified operator have been previously learned, that the "tumor" was a pregnant uterus.

Independently of all else, ovarian tumors seldom demand operative interference, either by tapping or ovariotomy, until a period exceeding normal gestation has passed, and certainly a period of five and a half or six months, by which time pregnancy, if present, can with certainty be established. Cases often arise in which unmarried women, or wives separated from their husbands, are anxious to

believe and have it believed that their pregnancy is an ovarian tumor; on the other hand, married women have believed themselves pregnant, when the lapse of months has proven the difficulty to be an ovarian cyst, or some other difficulty simulating pregnancy. The intelligent and prudent physician will therefore be his own judge.

Some of the salient points of difference are these: In *pregnancy* the enlargement comes on rapidly; it is symmetrical; the countenance is usually but little changed, is perhaps more than usually fleshy; the chest is not conical; œdema of the limbs after the seventh month is common; the cutaneous veins of the abdomen are not enlarged, but in their place are formed the *linea albicantes;* menstruation is usually absent; fluctuation can seldom be produced; vaginal touch shows softening and shortening of the cervix uteri, and enlargement of the uterus is easily discovered.

In *ovarian cyst* the growth has come on slowly; was at first not symmetrical; the countenance is emaciated; the chest is bulging and conical; œdema of the limbs is not usually present; fluctuation is easily detected; the superficial veins of the abdomen enlarge; menstruation is seldom interfered with; the vaginal touch shows no softening of the cervix uteri or enlargement of the organ.

Besides, in pregnancy, *ballottement* after the fourth month, and the fetal pulsations after the fifth, will, with the fetal movements, from this time on render the diagnosis certain.

Extra-uterine pregnancy. Ovarian and tubal pregnancies will usually declare themselves by the rupture of their enclosing membranes, before the time that any operative procedures would be deemed advisable. An *encysted pregnancy*, from its stationary character, is hardly likely to be mistaken for an ovarian tumor; moles and hydatids occupying and enlarging the uterus are accompanied by amen-

orrhea, and often serous or hemorrhagic discharges from the uterus.

Where pregnancy occurs in conjunction with ovarian cyst, the diagnosis may be difficult in the extreme. It is true the usual means will make out the existence of the pregnant uterus, but as the tumor will be usually behind it, it will perhaps be impossible to discover it.

Enlargement of the uterus from contained gases or fluids. Enlargement from retained blood, *hematometra*, from water, *hydrometra*, and from gases, *physometra*, all imply as a necessary condition for their existence a closure of the genital canal at some point. An imperforate hymen, by retaining the menstrual fluid, would give one form of hematometra, which may also be caused by the closure of the cervical canal, occurring as a sequence to some inflammation or injury.

It is only necessary to here speak of the possibility of these derangements being confounded with ovarian tumors, as the enlarged uterus or imperforate hymen would at once place the observer on his guard.

Uterine fibroids and fibro-cysts. Sub-mucous and intramural fibroids, by the general uterine enlargement produced by them, and especially in the former variety by the profuse menstruation or metrorrhagia attending their development, are quite easily differentiated. The depth of the uterine cavity is increased indefinitely, but with the subperitoneal variety, especially if pedunculated, the difficulty becomes very great.

The pedicle may be so long as to allow of extensive movement, quite independently of the uterus. Added to this they have a peculiarly elastic feel, which has often, even after their removal, led good diagnosticians to suppose them to be cysts with fluid contents, an illusion which could only be dispelled by their incision.

As illustrating the difficulties of diagnosis, Spencer Wells states: "Of the eight first published cases by Kœberlé of removal of uterine tumors by gastrotomy, in only three was the diagnosis of uterine tumor accurately made before operation. In two the diagnosis was doubtful, and in three the tumor was believed to be ovarian. In fact it has happened to many surgeons, and to myself among the number, that we have commenced operations as ovariotomy, and even removed tumors from the abdomen, under the impression that we were dealing with diseased ovaries, when, upon examination, they have proved to be pediculate fibroid outgrowths from the uterus."

In cases of doubt it is recommended that the tumor be punctured with a large-sized trocar, a proceeding which, although not entirely unattended by danger, seldom produces serious results.

Encysted peritoneal dropsy. Encysted dropsy of the peritoneum is of very rare occurrence; it follows upon and is caused by peritonitis; does not produce the prominence of the abdomen caused by ovarian cysts; contains but a small amount of ascitic fluid; is of slow increase, and does not impair the general health or change the appearance of the countenance.

Cyst of the broad ligament. Cystic tumors of the broad ligament are usually considered to be ovarian until after tapping. The contained fluid is perfectly clear, non-albuminous and of low specific gravity, and the sac seldom refills after tapping. These cysts are of slow growth, do not affect the general health or produce material emaciation, and are peculiar to young persons.

Treatment. As cysts of the broad ligament seldom refill, it is obviously proper in cases where an exploratory tapping has disclosed a clear, limpid, non-albuminous fluid, resembling

spring water, to tap the cyst and cause a thorough evacuation of its contents.

Renal tumor. Tumors of the kidney, both solid and cystic, occasionally but rarely occur. The fact, if it can be established, that a tumor commenced above the pelvis in the lumbar region, and extended down, is sufficient to exclude an ovarian tumor. Added to this the fact that it is prominently upon one side, that even in its most advanced stage it never produces a symmetrical development of the abdomen, and we have several strong points of variance from ovarian cysts.

According to Peaslee, cystic kidney is of slow development, no early emaciation occurs, and coils of the intestines are found in front of the tumor.

My own experience with tumors of this nature has been limited to one case of *hydronephrosis*, which was of comparatively rapid growth, more rapid than is customary with ovarian tumors. Pain was a prominent symptom, and neither before death for two or three months, nor in the *post mortem* examination was any portion of the intestines found in front; they were entirely displaced to the opposite side. Emaciation in this case was gradual and in the end quite extreme.

The entirely unilateral character of the growth, and its high origin however, would have completely excluded suspicion of ovarian enlargement, had the patient not been a boy, thus ruling it out.

The pressure of kidney tumors upon the superimposed intestines, may exclude flatus and prevent resonance upon percussion, but with due care a mistake is not probable but possible.

Splenic and hepatic cysts. These cysts from their high origin, if seen early or if an accurate history of their early growth can be obtained, will be thus differentiated from ova-

rian cysts. They are too preceded by more marked general derangement of the health. Later however, after attaining a large size, the mistake has often been made by expert diagnosticians of considering them to be ovarian growths.

Fecal tumors. A mass of hardened feces, especially at the commencement of the ascending colon, has been supposed to be an ovarian tumor. In such cases it should not be forgotten that a regular or quite soluble condition of the bowels may nevertheless be present.

The tumor has a doughy feel, is not at all elastic or fluctuating, and if it can be compressed by the fingers may be indented. A prolonged treatment with laxatives and copious injections benefits and will ultimately remove it.

Pelvic abscess. Pelvic abscess has in its initial stages been mistaken for ovarian tumor. But the pain, fever and chills accompanying would preclude the admission of ovarian cyst, except in a state of suppuration, opposed to which hypothesis would be the fact that the tumor had not till now been discovered, and the improbability that an ovarian tumor would exist undiscovered long enough to have gone into a stage of suppuration.

Distended bladder. It has frequently happened that a distended bladder has been mistaken for an ovarian cyst. The urine which gradually dribbled away, was supposed to be crowded out as fast as secreted by the pressure of the tumor. With the present knowledge of the subject such an error would be inexcusable, the more especially since the simple introduction of a catheter would readily disclose the nature of the difficulty.

Hematocele. The rapid occurrence of hematocele with pain, great prostration, and its usual connection with menstruation or some pelvic hemorrhage, if obtainable facts in the history of the case are sufficient to originate doubt as to the ovarian character of a tumor. Hematocele is usually

post-uterine, does not present an easily defined or circumscribed tumor, fluctuation is at first difficult to obtain, and the tumor grows after a time harder.

Obesity. A large deposit of subcutaneous fat upon the lower part of the abdomen, often occurs to women between thirty and forty years of age. Coming quite rapidly as it does it has been mistaken for an internal tumor.

In 1823, at Edinburg, the first ovariotomy attempted in Great Britain was by Mr. Lizars, and not only he but other surgeons of note here made the mistake of supposing a large collection of fat under the skin of the abdomen to be an ovarian tumor. At the present day our diagnostic knowledge is too far advanced to necessitate making such a mistake. The symmetrical character of the enlargement, the absence of any derangement of the health, the fact that it can be seized between the thumbs and fingers and raised away from the abdominal cavity, would at the present time prevent any such mistake.

Tympanites. Distension of the bowels with gases has strangely enough been taken for an internal tumor. The clear resonance upon percussion is the only diagnostic sign needed.

Phantom tumors. Nervous and hysterical subjects are occasionally affected with an involuntary contraction of the abdominal muscles, producing an enlargement to which the name of *phantom tumor* has been given. Although the abdomen may thus be so enlarged as to resemble well advanced pregnancy or ovarian tumor, the absence of fluctuation and presence of clearness upon percussion are sufficient to differentiate the case from ovarian cyst. Upon the administration of ether or chloroform, the spasmodic action at once subsides.

Omental tumors. Tumors of the omentum and peritoneum fatty and fibro-plastic, so nearly resemble in some

cases the symptoms of ovarian disease, that tapping or exploratory incision are the only reliable means of diagnosis.

Cancer. Malignant affections may be surmised where the growth of the enlargement is rapid and painful, and where the general health becomes rapidly affected.

A floating kidney will be more movable and sensitive than an ovarian tumor; the *shape of the kidney* will also assist the differentiation.

Of the diagnosis of adhesions, length of pedicle, etc., etc. In debating the propriety of ovariotomy it is of importance, so far as prognosis is concerned, to form a judgment as nearly as possible correct as to the existence and extent of adhesions and the length of the pedicle. And while adhesive inflammation probably precedes the formation of adhesions, making inflammatory attacks in the history of the case a reason for anticipating adhesions, they will nevertheless be found even of an extensive character where no history of past inflammation is present. As a rule we may consider:

1st. That in large monocysts adhesions to some extent will be present.

2nd. That oligocysts and polycysts are more likely to furnish adhesions.

3rd. The slower the growth of a large tumor the greater the likelihood of adhesions.

4th. If the tumor is quite immovable, or,

5th. The existence of pregnancy since the commencement of the tumor, will indicate a probability of adhesions.

6th. The presence of the uterus in front of a large tumor, or the presence of the lower part of the tumor in the pelvis, especially if the uterus be at the same time high, or if inflammation have occurred in the past history of the case, will indicate the presence of adhesions.

7th. Adhesions probably exist when the fluid obtained at a first tapping is brown or dark.

On the other hand we may expect no considerable adhesions when:

1st. As the patient lies on the back, the abdominal muscles are seen to glide over the tumor in the movements of inspiration and expiration.

2nd. If ascites be present with the tumor.

3rd. If the abdominal walls can be caused to glide over the tumor.

4th. In monocysts of rapid growth.

5th. In dermoid cysts.

A long pedicle is indicated by a protuberant abdomen and movable uterus; while a short pedicle is made probable by a lateral spreading of the abdomen with a fixed uterus, and the pressure of the tumor in the pelvis as evidenced both by vaginal touch and the impossibility of crowding the fingers between the growth and the symphysis pubis.

Diagnosis by exploratory incision. Having so far as is practicable perfected diagnosis, there may still be some points of doubt. The extent and character of the adhesions, the malignant or non-malignant character of the growth, the site, size and probable length of the pedicle, and perhaps other questions may lack an answer.

To make use of this method of diagnosis, every preparation is made as for an ordinary ovariotomy, and the patient placed in proper position, for should the knowledge gained by the exploratory incision be of a favorable character, it is better to proceed at once and complete the operation.

Upon the other hand should the knowledge gained be adverse to the operation, it can be abandoned without having subjected the patient to but little more risk than that of a common tapping. An incision one inch in length is made in the *linea alba* through the skin and superficial fascia down to the peritoneum. This is then caught up with

toothed forceps or a small double hook, and with knife or scissors slightly nicked through.

Ascitic fluid if present will now of course at once escape, and after on a grooved director enlarging the aperture in the peritoneum, to correspond with the cutaneous incision, the tumor will be brought to view. It is in all cases advisable to check the cutaneous hemorrhage before opening the peritoneum.

The finger can now be introduced and the feeling of the tumor as to hardness, nodulation, etc., etc., be ascertained, and so far as possible the extent and character of the adhesions, its relation to the uterus, and the length, size, and situation of the pedicle may be investigated. An ordinary No. 10 or 12 urethral sound subserves a good purpose for tentative explorations to points beyond the reach of the finger, especially with a view to ascertain the extent and position of adhesions.

Should the result of the information thus gained be satisfactory, the operator can proceed as in an ordinary ovariotomy; but if not, the wound is closed as is usual after the completion of the operation, and the patient has undergone no material risk.

Spontaneous changes in ovarian cysts.

1st. Inflammation and suppuration of ovarian cysts may occur in consequence of tapping, the influx of blood from vascular papillæ or general injuries. Suppuration following, and the walls of the cyst becoming weakened, they may burst and discharge their contents into the peritoneal cavity, causing death, which indeed may precede rupture of the cyst, from peritoneal inflammation or exhaustion.

2nd. Fatty degeneration of the cyst wall to a usually limited extent may occur.

3rd. Twisting upon its pedicle may occur, causing:

a. Influx of blood into the cyst and possibly fatal hemorrhage.

b. Inflammation and suppuration or gangrene, with consequent rupture of the cyst, peritonitis and death.

c. Atrophy of the cyst.

d. Complete separation of the cyst and its diseased ovary, which may possibly migrate and establish sufficient adhesions with some foreign part of the abdominal cavity to maintain vitality.

4th. Rupture of the cyst may occur into the intestines, bladder or peritoneum. Cases have been reported of the rupture of ovarian cysts into the peritoneum, resulting in recovery, but considering the extremely irritating properties of the ovarian cystic fluid, it is more probable that the supposed ovarian cysts were simply cysts of the broad ligament, whose rupture might be followed by a complete cure.

5th. Ovarian cysts have sometimes been observed which exhibited a tidal increase and decrease in activity, and in a few cases the complete absorption of their contents has been observed.

Prognosis. If left to take their course, the prognosis is eminently unfavorable in undoubted ovarian cysts. With rare exceptions an unfavorable issue will occur in an average of from one to two years, polycysts being more rapidly fatal than monocysts.

Besides the legitimate effects of the tumor, its pressure:

a. Upon the stomach and digestive organs may impair nutrition to an unfavorable extent.

b. Upon the lungs may produce harassing dyspnea and capillary disturbances, resulting in serious or fatal disease of the respiratory organs.

c. Upon the kidneys may cause damaging if not fatal derangements in their physiological action.

Cystic and peritoneal inflammations are in advanced cysts at all times liable to manifest themselves, and should an attack of any intercurrent disease, more especially one implicating the vital organs, occur, the chances for recovery will be very much diminished. Pregnancy, by causing pressure upon the cyst, predisposes to produce softening and rupture, so that, while not a necessarily fatal complication, it is to be dreaded.

If left to the best medical treatment that can be given, the prognosis will be but slightly more favorable. If treated by ovariotomy, we may in general terms pronounce the prognosis favorable, since from sixty to eighty per cent. of ovariotomies terminate in recovery, the operation being, as a surgical procedure, less unfavorable than amputation of the thigh, at the shoulder-joint, and equaling in danger amputation of the arm, &c., &c.

As influencing and contributing to a favorable issue, too, should be considered certainty and clearness in diagnosis; a cheerful, courageous desire for the operation by the patient; age below twenty-five or above fifty; a monocyst or polycyst of slow growth; thinning of the abdominal walls from pressure and distension; proper social and sanitary surroundings; and it is, I believe, agreed by all that better results follow where some degree of general impairment to the health has taken place, rather than that the operation should be undertaken in full health.

Unfavorable circumstances would be: Uncertainty or doubt in diagnosis; despair of the patient, with gloomy forebodings of death; very rapid growth of the tumor; unimpaired health, or extreme debility; and the general reverse of the above-mentioned favorable circumstances.

Treatment. The treatment may be classified under the two general divisions of *medical* and *surgical*.

Medical treatment. The literature of ovarian dropsy presents little to encourage one to rely upon medical treatment. The remedies which appear to have been most generally relied upon for benefit have been the iodide, chlorate, nitrate and bromide of potash, the oxide of gold, &c., &c. Upon this point Prof. Simpson says: "For my own part let me state at once I have no belief that any drugs or medicines ever removed a cystic multilocular growth or dropsy of the ovary. I would almost as soon expect to remove by them a foot or a hand or any integral part of the normal body." And the point made by Dr. Peaslee is too strong and good to pass unnoticed. He says: "And reasoning on anatomical grounds, we can expect none other than a negative result of mere medical treatment for the cure of ovarian cysts. For what agency would be likely to determine the remedy, especially to and through the two arteries of the pedicle, which alone usually carry the blood to the ovarian cyst, and thus to modify the nutrition of the latter? If a tumor as large as an ovarian cyst were developed from the phalanges of one of the fingers, the proposition to remove it by internal remedies would be accepted as simply absurd; and yet there would be as liberal a vascular connection in that case as there is in cases, without complications, of ovarian cyst."

That the general health, and the action of the kidneys, bowels, stomach and skin, should receive attention, and that in this way discomfort may be relieved and life prolonged, or the condition of the patient for further treatment be made more promising, can not be doubted.

It is equally clear to me that all debilitating treatment should be avoided. It has time and again been demonstrated that hydragogue cathartics and diuretics were powerless, and even worse than useless, in remedying the condition of such patients, except the complication of ascites coexist.

That under the potash treatment, with a liberal supply of tonics, the condition of patients has been bettered, not cured, is I believe also true. Further than this in the advanced stage it is useless to go, in the light of present or probable future knowledge.

In the early part of the first stage, while the tumor was no larger than an orange or a small fist, I have seen tumors supposed to be ovarian cysts, but which may nevertheless have been cysts of the broad ligament, completely disappear under a tonic and alterative treatment. In these cases use was made of the following:

℞. Tinct. viburni op., Oj.
Potass. iodid., ℥ ss.

M. Dose a dessert or tablespoonful three or four times daily.

The tincture of viburnum was prepared by tincturing in the usual form cort. viburni op., ℥ viij, in spts. juniperi, Oj.

Externally the following ointment was thoroughly rubbed into the tumor night and morning:

℞. Potass. iodid., ℥ ss.
Aq. dest., q. s. ut solutio fiatur.
Adipis suill., ℥ij.

Ft. unguentum.

In the light of the fact that others have used the potassic iodide alone or perhaps in other combinations successfully, I can not claim certainly that this treatment is better than some others that have been used. I can say however that cases thus treated have stood the test of ten years, and are yet sound and perfectly well, and it is the primary treatment that I should recommend in all such cases, in which there must however almost inevitably be a lingering doubt in the mind of the conscientious practitioner whether the tumor, if removed, was really ovarian or not.

It is asserted that the external application of iodine is

without effect. If so its use in the ointment referred to was superfluous; but I incline to the belief that we possess no remedies so capable of modifying these cysts as iodine and the compounds of potassium, and that the local absorption of some portion by the skin must prove beneficial.

An ointment containing iodide of lead, applied to the vagina, has been apparently productive of good effects, but the remedy needs further confirmation (Peaslee).

Surgical treatment. Surgical treatment may be:

1st. Palliative.

2nd. Curative.

Palliative treatment consists in tapping the sac and evacuating its contents. With varying degrees of rapidity it refills, I think always more rapidly than at first, and with successive tappings it is often the case that the process of refilling proceeds more and more rapidly, until death from exhaustion or some incidental inflammation follows.

Prof. Peaslee mentions a case in which he removed, at one operation, between one hundred and forty-nine and one hundred and fifty pounds of fluid, which was the last of four tappings occurring in one year.

After tapping, the secretion of one to two pounds daily is a not uncommon occurrence, though some patients may be two or three years in refilling. As cure is not expedited, simple tapping, unless for diagnostic purposes, should not as a rule be performed, except in cases where from the debilitated condition of the patient, or some other reason, it is not desirable to resort to more radical measures for cure.

When confined to monocysts and oligocysts the operation of tapping is not usually a formidable one, but in case of polycysts, as the trocar does not reach and evacuate all the cysts, those unbroken are liable to rupture subsequently,

and discharging their acrid contents into the evacuated cysts thus secure an infiltration of the fluid through the puncture into the peritoneal cavity. From the peritonitis thus caused probably arises the high percentage of deaths following a first tapping, amounting according to various authors to from eighteen to fifty per cent. The causes of death are peritonitis, inflammation of the cyst, and hemorrhage from striking a blood vessel in the cyst or omentum.

Method of operating. As a first procedure it should be ascertained that the bladder is empty. The patient may be either in the sitting or recumbent position. I usually prefer to have the patient lie upon the *right* side, especially if there should be any danger of syncope, as embarrassment to the action of the heart is thus less likely to ensue than when lying upon the *left* side. The trocar should be of good size, and before its introduction the skin should be incised with a lancet.

The point selected for tapping may be in the median line between the umbilicus and pubis, one and a half to three inches below the umbilicus or above the pubis, which is perhaps the most common location; in either *linea semilunaris,* or in exceptional cases where a better evacuation of the cyst seems probable, in other places.

It is not a *necessity* that a bandage should be applied during the operation, some preferring to leave the abdominal walls free to be manipulated and pressed by the hands, so that the cyst or cysts may be most completely evacuated. In all cases however upon the completion of the operation, a bandage should be snugly applied and the patient put to bed for a few days. Tapping by the vagina or by the rectum has been recommended and practiced, but the disadvantages out-number the advantages, and this course is seldom now followed.

Curative measures. As curative surgical procedures we have:

1st. Tapping with subsequent pressure.

2nd. Tapping with the formation of a permanent opening.

3rd. Tapping with injections.

Tapping with subsequent pressure. After the evacuation of the cyst, as in ordinary simple tapping, it was proposed in 1844 by I. B. Brown to form a compress of folds of linen, and applying this firmly to the abdomen, retain it by adhesive straps or other mechanical appliances. The success of the operation was not such as to make it desirable or popular, and it has fallen into desuetude.

Tapping with formation of a permanent opening. This principle has been carried out in a variety of ways, and with some measure of success. At first it was proposed to make an incision through the abdominal parietes and wall of the cyst, and keep it open by the introduction of tents. Tapping through the vagina and the rectum, leaving the canula in position, has also been practiced, with the result of producing an exhausting and profuse discharge, lasting for years, with occasional cures.

More recently Dr. Noeggerath, of New York, carried into execution a device of his own, I believe, reporting five cures out of six cases operated upon. His method consisted in making an incision through the roof of the vagina posteriorly to the cervix, and thus exposing the cyst which was then evacuated, and the edges of a corresponding incision in the cyst were stitched to the edges of the vaginal incision. From time to time the cavity could thus be washed out with such solutions as seemed indicated.

This operation is evidently applicable and may be employed in monocystic tumors with such extensive adhesions as

to preclude ovariotomy, or in cases where after exploratory incision, that operation has been necessarily abandoned.

Tapping with injection of the cyst. After ordinary tappings, various remedies have been injected into the cyst, as solutions of sulphate and chloride of zinc, port wine, cystic fluid, etc., but common consent seems to have given to preparations of iodine the first rank. In this way the ordinary officinal tincture of iodine, the compound tincture of iodine, compound liquor of iodine, (iodine grs. viij, potassic iodide ℥ ss., water ℥j), and tinct. of iodine, water of each 100 parts, potassic iodide 4 parts, have been introduced in quantities varying from four to twelve ounces. As some portion of fluid will perhaps usually remain in the sac after the most thorough evacuation, the injection will thus be variably diluted.

Cases suitable for injection. These can never be positively determined previous to tapping. Monocysts containing non-albuminous, serous or purulent fluid, with no adhesions preventing their collapse, present promising cases for this form of treatment. The greater the deviation from these conditions, the smaller the likelihood of beneficial result, although a beneficial modification has resulted even where the injection of polycystic tumors has been practiced. At all events it is believed that the chances for a subsequent ovariotomy are not impaired should the injection fail.

Manner of making injection. It is important that:

1st. No portion of the injection should escape into the peritoneal cavity.

2nd. That sufficient fluid should be used to wet thoroughly all portions of the cavity.

3rd. The cyst should be injected early, while yet small, and before adhesions have formed.

The nozzle of a syringe may be fitted to the canula, and

through this the injection be made, but there is a liability that contraction of the cyst following the introduction of the injection, or some motion of the patient, may cause the retraction of the cyst beyond the end of the canula, so that a portion of the injection may find its way into the peritoneal cavity.

To obviate this difficulty, through the canula may be inserted a piece of rubber tubing, or a flexible catheter, which, being carried as far as possible into the cyst, will permit the removal of the canula. Through this tube the injection is now made, and the tumor manipulated with the fluids, or the patient caused to change position, so as to facilitate the application of the injection to all parts of the cyst. The same syringe can now withdraw the fluid, and as the tube is being withdrawn, pressure with the thumb and finger at the point of insertion will approximate the orifices in the abdominal wall and cyst, so as to prevent escape of the injection into the peritoneal cavity.

Should a large portion of the injection remain, singularly no serious consequences seem to follow its absorption, which is so rapid as often in a few moments to impart an iodine taste to the saliva, and to be readily discovered in all the secretions.

The experience of different operators varies as to the amount of pain caused, the danger attending and the beneficial results accruing from the injection of iodine. While some declare the operation painless and harmless, others have had a large fatality following the operation, and frequent peritoneal inflammations; some reporting a large percentage of cures, others few if any.

For my own part the injection has never been painless, but attended in the mildest cases by a disagreeable sensation of constriction or drawing, caused by the contraction of the cyst; no fatalities have occurred in between twenty

and thirty cases, nor can I report a certain cure in even one case, but two probable cures still awaiting the developments of time.

The reported failures may in part be attributed to the fact that the operation was only attempted after the cyst had attained a large size, a condition as heretofore stated unfavorable.

Ovariotomy. It is not necessary now, as it would have been ten or fifteen years ago, to defend the operation known as ovariotomy, that operation which has for its aim the radical cure of ovarian tumors, by laying open the abdominal cavity and removing them entire. To whom belongs the honor of first conceiving of, or suggesting the operation is not clearly known, but it is generally conceded that to Dr. Ephraim McDowell, of Danville, Kentucky, who performed a successful ovariotomy in 1809, belongs the honor of first carrying into successful execution a surgical operation which had doubtless suggested itself to many other inventive minds.

Results. Up to 1871, the total number of ovariotomies reported in this country according to Dr. Peaslee, show about sixty-eight per cent. of recoveries, the operation having been performed by twenty-two different operators. Spencer Wells made in his first five hundred cases, a report of seventy-four per cent. of recoveries, the first hundred cases giving sixty-six per cent., the second seventy-two, the third seventy-seven, the fourth seventy-eight, the fifth eighty.

Conditions justifying ovariotomy. The conditions which justify or indicate ovariotomy are :

1st. A reasonably certain diagnosis.
2nd. A general impairment of the health.
3rd. A medium large, or large growth of the tumor.

4th. A desire on the part of the patient for its performance.

5th. No discoverable adhesions.

6th. The rupture of a cyst and consequent peritonitis, can only be turned to a favorable termination by an immediate ovariotomy.

The operation would be contra-indicated by:

1st. A yet perfect state of health.

2nd. By the presence of even probable pregnancy.

3rd. By the fact that the non-albuminous character of the fluid obtained by tapping, rendered it probable that the cyst was one of the broad ligaments.

So long as these conditions are present, the operation should be deferred, and on no account should it be undertaken with the co-existence of any progressing fatal condition as tuberculosis, well recognized cancer of any organ, organic disease of the heart, lungs, bowels or kidneys, since a fatal result can in such cases but be hastened. Decidedly unfavorable too is the presence of extreme anæmia, hectic fever with rapid pulse and red tongue, or such a stage of exhaustion as to afford no hope of rallying after the operation.

Conditions most favorable to its performance. So far as the patient is herself concerned, these have generally been already considered. The ultimate success of the most happy operation may be jeopardized or completely overthrown by deficient nursing, unhealthy or unhappy surroundings, and even by climatic influences. A good, quiet competent nurse, of cheerful and obliging disposition, able to introduce a catheter or give an injection, is almost indispensable. A well ventilated room, which can be kept night and day at a uniform temperature of about 70° F. in a healthy country locality, should if possible be secured.

If possible, a clear bright day with the prospect of settled fair weather for at least twenty-four hours, should be select-

ed for the operation. It will be well if the patient's bowels have been gently moved the evening previous, by the administration of some mild remedy like the citrate of magnesia, and it is especially important that no food should be taken for at least three or four hours preceding the operation.

General preparatory treatment. Different operators have entertained different views with regard to the extent of preparatory treatment. If the circumstances demanding an operation be not pressing and urgent, and the patient be in a worn out and anæmic condition, a few days may be profitably spent in general tonic and restorative treatment. No specific rule can be given however, and the good judgment of any man possessed of the requisite skill and knowledge to perform the operation would be the best guide.

Instruments, appliances and assistants required. While in ordinary cases few instruments are required, since no one can before incision determine what may be needed, everything should be in readiness.

Of instruments may be mentioned as of almost absolute necessity:

1st. A good scalpel.
2nd. A probe pointed bistoury.
3rd. A sharp pointed bistoury.
4th. A grooved director.
5th. Forceps toothed, torsion and for twisting wire.
6th. Scissors.
7th. Trocars.
8th. Ligatures of carbolized silk, and silver or iron wire for sutures.
9th. Needles of various kinds and sizes.
10th. A steel male sound, No. 10 or 12, for exploration.
11th. A supply of sponges.
12th. Adhesive plaster.

13th. One or two clamps for the pedicle.

14th. The anæsthetic.

15th. A uterine sound.

16th. A female catheter.

17th. An abundant supply of pure hot water.

Of subsidiary but possible use and hence to be held in readiness are:

1st. An écraseur.

2nd. Means for arresting hemorrhage, as solutions of persulphate or perchloride of iron, and the actual cautery.

3rd. Hare-lip pins if desired to close the wound.

4th. A supply of carbolic acid.

A reliable assistant attends to the administration of the anæsthetic, while the operator, standing upon the right side of the patient, places an assistant directly opposite to attend to such duties as he may direct. One or two other assistants attend to the supply of water and sponges, use the sponges, or make themselves useful as directed.

Of the anæsthetic. Probably pure sulphuric ether is more extensively used than any other anæsthetic. Its alleged advantages are that it produces the least nausea and vomiting, and the greatest safety. Chloroform is so much more rapid in its effects, that undoubtedly unless in the hands of a thoroughly awake and competent administrator, greater danger attends its use than follows that of ether. The experience of many hundred administrations of chloroform however convinces me, that if judiciously managed, it is quite free from danger. Nor would my own experience show that the nausea is greater with chloroform than with ether, as in the very many times in which I have seen both administered, vomiting has been as prominent a symptom in the one as the other. Possibly the prolonged administraation of ether may be better borne than that of chloroform.

Under no circumstances should the great inflammability

of ether and its vapor be lost sight of, nor the possibility of an explosion following from a fire, even yards distant. Mr. Wells uses latterly, as an anæsthetic almost exclusively, the bichloride of methylene in form of a spray, an agent as yet little used in this country. Whatever may be the anæsthetic used, its influence should be carried to the point simply of producing anæsthesia.

Of the operation. The patient should be placed upon a table four or five feet long, and not so wide as to prevent her being easily reached by the operator and his assistants on either side. The position usually preferred is upon the back, turning upon the side if necessary for the evacuation of the tumor, or to roll it out or to allow fluid to escape from the cavity. Success so largely depends upon attention to minutiæ, that the most experienced operator will usually meet with the greatest success.

While not ordinarily requiring greater skill perhaps than many other operations, it at all times and under all circumstances demands perfect coolness. Above all things, no rash haste should be attempted. A few minutes more or less are of little importance, except it be in an unusually complicated case whose duration reaches out to hours, and deliberation may be said to be essential to success.

Of the sponges. They should be of good, firm, moderately fine quality, in number four or five. The most scrupulous care is necessary in cleansing them, which should be done by first a thorough and prolonged beating to remove particles of sand or other foreign substances. Boiling for an hour in water slightly acidulated with sulphuric acid is advised, to remove cretaceous deposits, after which prolonged rinsing with pure clean water, and ultimate soaking for a few hours in water containing in solution a small amount of carbolic acid will complete their preparation. If the same sponges be used for subsequent operations, it should only be done after an equally effective and thorough cleansing.

Length of incision. All statistics go to show that incisions of above five or six inches in length are followed by a proportionately increased mortality, while very short incisions, by not affording a sufficient opportunity to inspect and cleanse the parts, are also followed by increased mortality. While the mortality following the long incisions is probably in part due to the complications in the case which necessitate them, it can but be regarded as the best practice which limits the length of the incision to the necessities of the case, and which affords room for the removal of the collapsed cyst, the treatment of the pedicle, inspection of the parts, and the introduction of a hand with sponge to remove any discharge or blood which may have accumulated in the peritoneal cavity. Such an incision will range from four and a half to six inches in length.

Everything being in readiness and the bladder evacuated, the incision is made in the median line between the umbilicus and symphysis pubis, its lower extremity terminating an inch and a half above the symphysis. Upon the start an incision of three and a half or four inches is probably long enough; for if the case be one of an uncomplicated cyst, the incision will be ample; if it be found impossible to complete the operation, it will be in one sense only an exploratory incision, and expose the patient to no great hazard. Should a longer incision become ultimately necessary, it may be extended upwards, passing to the left of the umbilicus to avoid wounding the round ligament of the liver.

As the pressure upon the tissues may have very much changed and modified them, the incision should be deepened slowly and cautiously. When nearly to the peritoneum, thin layers of tissue should be elevated upon the point of the grooved director and thus divided. In the meantime hemorrhage is stopped by the application of sponges dipped

in water as hot as is well borne by the hand, to which a few drops of carbolic acid have been added.

Upon reaching the peritoneum, if ascites be present, it will bulge or protrude forward. The cavity should not be intentionally opened until all hemorrhage has ceased, and should vomiting come on in the early administration of the anæsthetic, it will be fortunate if it has passed before completely opening the peritoneum. In case of retching from vomiting, the hands of an assistant should restrain the protrusion of the ventral contents.

In passing through the peritoneum, a toothed forceps or tenaculum should elevate a fold, which may be cut across with scissors or scalpel, making a small aperture. Through this may now be passed the finger to explore the tumor; then the male sound, warmed, is carried in to learn the position and extent of adhesions, and, if not too firm, to disrupt such as occupy the anterior surface.

Meantime ascitic fluid, if it escape should be cared for by assistants and absorbed with sponges or caught in convenient vessels. If the operation is to be completed, the peritoneum is now divided upon a grooved director or the finger to the full extent of the cutaneous incision. To lessen its bulk, the tumor may now be tapped and the escaping fluid conducted into pails or a tub at the side of the table.

For this purpose a variety of forms of trocar and canula have been devised and used by different operators. Fig. 61 is a representation of Spencer Wells' ovariotomy trocar,

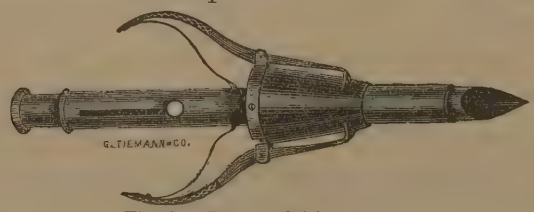


Fig. 61. Spencer Wells' trocar.

which is provided with clips to seize upon the cyst after its

partial evacuation, to prevent its retraction by any accident within the abdominal cavity. The same end may be accomplished by securely tying the cyst wall to the canula, a proceeding adopted by some operators.

While the fluid is being drawn off, the hands of assistants make such pressure upon the sides of the abdomen as may be necessary to cause its evacuation without protrusion of the cyst or intestines, which, if they should protrude, are gently laid back. By this means also the edges of the incision are kept in close apposition with the cyst, thus preventing the entrance of any fluid within the abdominal cavity.

The use of pressure also prevents sudden prostration and syncope of the patient following the evacuation of the cyst; the slow evacuation through a small canula is advisable in case of great prostration for the same reason. The trocar should be inserted near the upper commissure of the wound, since as the fluid evacuates, the cyst will probably, should no adhesions be present, settle downwards towards the pelvis. Cleanliness, and gentleness of manipulation are all-important requisites, for want of which all may fail.

The fluid having been evacuated, the aperture in the cyst made by the trocar may be closed tightly with a few stitches, thus preventing the escape of any remaining fluid and its possible entrance into the peritoneal cavity. The cyst is then carefully lifted out, adhesions being cautiously broken down, and bleeding vessels secured by torsion, the application of astringents, or as thought most advisable. In case of adhesion to the intestines, it is better to cut out a portion of the cyst at that point, making sure to remove the inner or secreting coat. On raising the cyst from the cavity, care should be taken to support it, and not allow it to violently drag upon its pedicle, endangering its continuity or causing the displacement of attached viscera.

Treatment of the pedicle. The treatment of the pedicle must now be chosen. At present no universally applicable treatment is known, nor is it probable that any plan can be devised which will be best for all cases; nevertheless different operators have their individual preferences, yet vary in treatment with the circumstances of the case. The principal plans may be enumerated as:

1st. Ligature, cutting the pedicle off close, and dropping stump and ligature back into the abdominal cavity.

2nd. Ligature, dropping the stump back, but passing one or both ends of the ligature out through the lower angle of the wound.

3rd. After ligation, the ends of the ligature are passed downwards through the roof of the vagina.

4th. Ligature, stitching or fixing the stump to the edges of the wound, from which also the ligatures protrude.

5th. The clamp, of which there are several varieties.

6th. The écraseur.

7th. The actual cautery.

8th. Enucleation.

The first ovariotomy of Dr. McDowell was performed by tying the pedicle. He says: "We put a strong ligature around the Fallopian tube near to the uterus; * * after which we closed the external opening with the interrupted suture, leaving out at the lower end of the incision the ligature which surrounded the Fallopian tube." His subsequent cases it would appear were all treated in the same manner. Whatever disposition may be finally made of the ends of the ligature, there still remain differences in their application to the stump.

Thus some have ligated simply each bleeding vessel, while usually the entire mass is encircled. Again, should the pedicle be, as is often the case, broad and flat, it is bet-

ter to pass the ligature through a section at a time, thus tying it in two, three or more sections with as many ligatures. In passing these ligatures through, care must be taken to avoid wounding any blood vessels of notable size, which may be avoided, if in no other way, by looking through it towards the light, if it can be sufficiently raised without too great traction, otherwise by careful inspection.

Prof. Peaslee adopts the very judicious measure of causing the separate ligatures to interlock like the links of a chain, where the pedicle is not very broad ("six inches").

Ligatures may be of carbolized strong hemp cord, saddler's silk or catgut; the last being in my experience unreliable, owing to its liability to break from rottenness, while the supposed advantage gained from its being an animal tissue is, I think, more fanciful than real.

Contrary to what might be supposed, frequent *post mortem* examinations at various stages after the operation have shown that the end of the stump does not slough off, but with the ligature usually becomes encysted or coated with plastic lymph, thus showing that its irritative or pernicious effects through sloughing amount to little or nothing.

In favor of carrying the ligatures out at the lower angle of the wound, is the fact that thus an avenue of escape for any pus formed is kept open, while opposed is the certainty that, for quite a long time at least, will a small suppurating issue be thus kept up. To accomplish the same purpose, some operators have introduced a strong glass tube with perforations at the lower end; to this tube a syringe can be attached to pump out pus. Others, again, have carried through the posterior *cul-de-sac* a small rubber tube perforated for a few inches from its inner end, and this, passing out of the vagina, terminates in a bottle, its end being kept under water to exclude air.

In some cases of threatened septicæmia, a warm carbolized wash has been injected through this tube, thus washing out the peritoneal cavity. If the pedicle be of the size of the finger, it will usually be sufficient to firmly ligature it by passing a strong double ligature of saddler's silk around it. If no or but very slight adhesions have been present, the ends, cut short, may be dropped back with the stump; but if numerous or extensive adhesions are found, more or less suppuration must be expected, for which some vent must be provided; hence the propriety of passing the ends out through the wound. At all times it should be remembered that many of the fatalities in ovariotomies have been caused by the ligature slipping from the stump prematurely; hence the propriety of passing the ligature *through the pedicle double*, and tying each side separately, and in passing the needle bearing the ligature through the pedicle, it should be kept "three-fourths of an inch at least, and more if possible, from the cyst," and nearly an equal distance from the uterus, and the ligature should be of a size to as nearly as possible fill the hole made by the needle.

It is hardly possible to tie the ligature too tightly; if it is to be brought out, it will, if tight, the sooner cut its way through. While applying the ligature, especial care should be observed not to allow traction to be made upon the pedicle, lest the ligature be caused to slip off.

Of the clamp. The supposed advantages of the clamp are, that it keeps the stump liable to suppurate out of the peritoneal cavity; it can be applied quicker, and it controls hemorrhage very surely; or by tightening it, it arrests hemorrhage should it subsequently appear. The latter appears to be really the only usual advantage, opposed to which is a dragging sensation sometimes experienced for some time after recovery. Practical results prove no superiority for either ligature or clamp, each being at times best.

A great variety of patterns of clamp have been devised

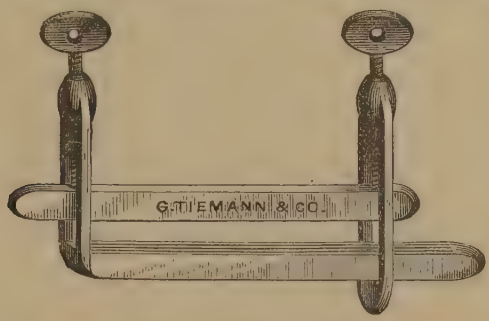


Fig. 62. Gueride's clamp.

Fig. 62 is a representation of Gueride's clamp, and Fig. 63

Fig. 63. Spencer Wells' clamp.

is one of the clamps used by Spencer Wells. Dr. Atlee's clamp is represented, closed, by Fig. 64; showing also the

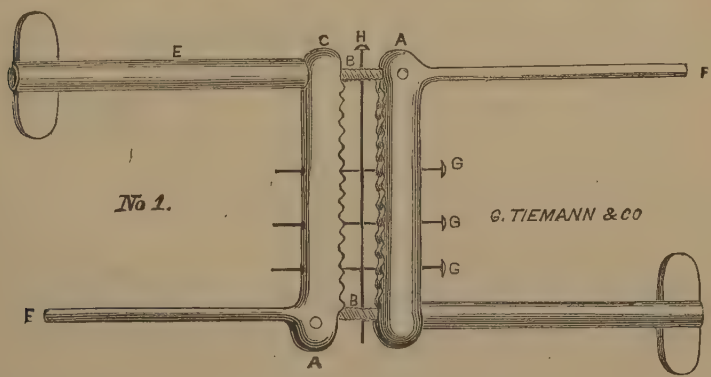


Fig. 64. Atlee's clamp (closed).

introduction of a pin at the points G, G, G, to shorten the *fenestra* or opening of the clamp so as to compress the pedicle to the smallest possible space, the pin being introduced as required before tightening the clamp. When placed, the direction and position of the incision are indicated by the

line B H, and the great advantage of this form of clamp lies in the fact that the flattening of the pedicle is parallel with the incision, thus affording a favorable opportunity for the approximation of the edges of the wound. The graduating pin G should be towards the pubic symphysis, thus affording the best opportunity for inspection of the pedicle. The engraving represents the size of the instrument. Fig. 65 represents the same instrument open for application to the pedicle.

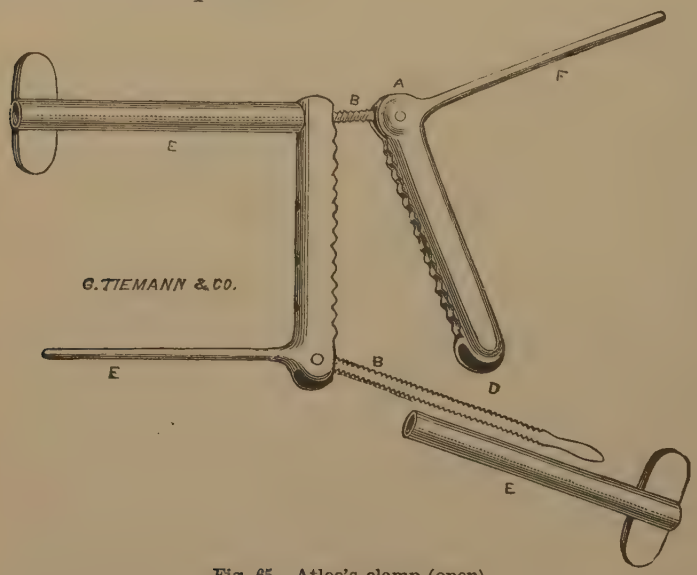


Fig. 65. Atlee's clamp (open).

The ecraseur and actual cautery, while they have been used successfully, have found little favor; most operators preferring to trust their patients to those forms of treatment which the experience of hundreds of cases has demonstrated to be safe, since upon the whole it can scarcely be said that deaths have been known to occur in consequence of the use of clamp or ligature in any of its forms, when the arrest of hemorrhage has been complete.

Of course deaths have followed the slipping off of the clamp and the ligature, but this fact should stand as a con-

stant admonition to the greatest diligence in faithfully and properly securing them, since we are unacquainted with any other equally safe means for their general treatment.

Of enucleation, first proposed and practiced by Dr. Miner, of Buffalo, N. Y., it may be said, that it probably affords a plan for the successful treatment of cysts whose extensive adhesions might otherwise render them intractable. By this means the internal secreting coat is separated from the outer layers of the cyst, the slight vascular inter-communication furnishing no hemorrhage.

Adhesions. Ordinary adhesions may be separated by the finger nails; adhesions to the omentum, which require great care in management, may be ligated with carbolized silk or catgut and cut off with scissors, it being safer to apply the ligature before cutting off the adhesions; the ends of the ligature are cut short off and ultimately returned with the stump, after due examination to be sure that the hemorrhage is controlled.

If such adhesions be simply peeled off with the fingers, the separation must be directly from the cyst, so that better opportunity is left for ligature should it become necessary, and it is better to ligate the entire mass rather than depend upon the ligation of each separate bleeding vessel.

Adhesions to the bladder, uterus or liver if quite firm, are best treated by cutting out the peritoneal layer of the cyst, removing with great care every vestige of the internal layer, thus leaving the external layer to its attachments. The resulting hemorrhage is controlled by the application of a solution of persulphate of iron or the cautery, which means should be employed to stop all other oozings not readily arrested by the ligature, torsion, or exposure to the air.

The divided adhesions should not be dropped back into the cavity without thorough examination, to prove that the

hemorrhage has been successfully stopped. The presence of two or three ounces of blood, may by its putrefaction, lead to a fatal termination.

Of the remaining ovary. After the removal of the cyst, the remaining ovary should in all cases be examined, since cystic disease of both ovaries is a not uncommon occurrence.

If the remaining ovary should be found atrophied, with a small cyst attached to it, or if a number of small cysts aggregating a mass the size of a hen's egg should be found present, or if any general cystic degeneration should appear, it will be better at once to remove the entire ovary.

But if a large part of the ovary appear to be healthy, although some small cysts may be present, it is better to carefully cut them away with scissors, arresting the resulting hemorrhage by the application of the persulphate or perchloride of iron.

Closure of the cavity. There is no question but that every particle of the cystic fluid which may have escaped into the cavity, together with blood, must first be removed. The sponges should be counted and all accounted for, a precaution that would seem needless to mention, but for the fact that it has happened that the wound has been closed, leaving a sponge concealed in the cavity, which mortifying fact has subsequently been demonstrated by a *post mortem* examination, an opportunity for which will always be afforded in such cases. An incision of three to four inches in length will require at least three deep seated sutures, which should enter the skin not less than three-fourths of an inch from the edge of the wound, and passing down to include the peritoneum, pass in reversed order up the opposite side emerging an equal distance from the cut.

Silver wire is preferable for the sutures, in the absence of which a large sized surgeon's or saddler's silk may be

used. Between each of the deep sutures place a superficial suture, and over the whole, reaching from side to side, to support the abdomen in case of vomiting, coughing, sneezing or any similar accident, lay strips of good adhesive plaster one and a half or two inches wide by twelve or fifteen in length. Upon this a light compress, wet with water fifteen or twenty parts, to glycerine one part, may be placed and retained in position by a bandage surrounding the body.

The patient is now laid in bed, if in cool weather between flannel sheets, and allowed to completely recover from the anæsthetic.

Subsequent treatment. Second only in importance to the proper conduct of the operation, is the judicious observance of a fitting subsequent treatment. Pain should be controlled by opiates, the nourishment should be of fluid nature for the first few days, as beef tea, milk, and later oatmeal gruel. It is not desirable to have the bowels moved for four or five days; when however it seems necessary from the sensations of the patient, or the probabilities of the case, an injection of a little warm water will probably be sufficient.

The urine should be drawn by catheter for perhaps the first week three or four times daily, thus avoiding all straining or voluntary efforts upon the part of the patient.

The dressing should be changed with regularity every two hours, or as often as it dries, a result retarded by the glycerine. When after three or four days a little suppuration commences from the pedicle, or any discharge of offensive character takes place, a small amount of carbolic acid may be added to the fluid in which the dressings are wetted. The superficial sutures should be removed from the fifth to the seventh day, or at such time as the edges of the wound seem to have firmly adhered. The deep seated sutures may remain for from ten to twenty days, as they may possibly

serve the purpose of keeping open vents for the escape of any discharge collecting in the abdominal cavity. Fig. 66 represents a convenient pair of scissors for cutting the sutures.

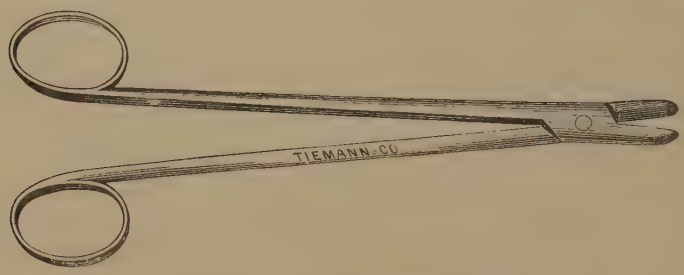


Fig. 66. Scissors for cutting wire sutures.

Until the wound is perfectly sound, the abdominal walls should be supported by adhesive straps and bandage, as indicated in the first dressing, to guard against the occurrence of ventral hernia, which has been known to follow this operation.

Throughout, the condition of the pulse and the temperature should be noted two or three times daily, a high temperature, especially when appearing suddenly, indicating the absorption of septic material from a probable reservoir in some part of the peritoneal cavity. For this search must be made and vent provided. Vaginal examination may disclose a fluctuating pouch in the posterior *cul-de-sac*, which, if found, should be evacuated by the aspirator or a long trocar and canula.

If thought necessary, antiseptic washes, such as water with a few drops of carbolic acid; a solution of chloride of zinc, ten grains to the pint of water, or pyroligneous acid, two to four drams to the pint, may be employed warm to cleanse out the abdominal cavity. Or the imprisoned discharge may be pumped out with the ordinary uterine syringe carefully inserted through some yet unhealed portion of the

incision. Where ligatures being used are brought out through the incision, they will usually come away in three or four weeks, but in a case reported by Dr. Peaslee, as also one coming to my knowledge, the time occupied was eighteen weeks.

CHAPTER XIX.

DISEASES OF THE FALLOPIAN TUBES.

The disorders to which the Fallopian tubes are subject are of so obscure and often irremediable a nature that but little need be said concerning them. They are liable to:

1st. Deformities of their peritoneal extremity.
2nd. Inflammation.
3rd. Stricture or occlusion.
4th. Dropsy.
5th. Dilation.
6th. Displacements.
7th. Carcinoma.
8th. Tuberculosis.
9th. Abscess.
10th. Hemorrhage.
11th. Fibrous tumors.

Deformities of the fimbriated extremity. These deformities, which are of no practical moment, consist in the development of a double fimbriated extremity, the presence of several openings near their abdominal termination, or the formation of a single fissure or slit without fimbriæ. There are no means by which such abnormalities can be determined during life.

SALPINGITIS, OR INFLAMMATION OF THE FALLOPIAN TUBES.

Inflammation of the Fallopian tube may be either acute or chronic, and probably never exists uncomplicated with inflammation of some of the adjacent structures.

The acute form pursues a rapid course, and may terminate with serious peritonitis, or the development of pelvic abscess, in death, or contraction of their caliber.

The chronic form may last for years with associated endometritis, and without serious results causing relaxation and dilation of the tubes.

Both the acute and chronic forms are usually outgrowths from similar forms of endometritis. Thus, gonorrheal infection, attacking the *endo-metrium*, may pass outward by continuity of membrane through the tubes, and thus invade the peritoneal cavity. While the catarrhal mucus generated in chronic salpingitis is comparatively innocuous in its effects upon the peritoneum, the acrid, irritating pus resulting from an acute or gonorrheal inflammation rapidly excites peritonitis, and may even produce fatal inflammation or pelvic abscess.

From what has been said it will therefore be seen that there are no distinctive symptoms, those of acute salpingitis being interwoven with the symptoms of acute endo-metritis and local or general peritonitis. With chronic inflammation may occur such a relaxation of the sphincter of the tube that the uterine sound may pass into the tube, thus leading the observer to suppose the depth of the uterus is five or six inches, when it is of but normal or but slightly above normal depth.

Treatment. No specific treatment can be laid down for inflammation of the Fallopian tube. The symptoms of the acute form will so nearly accord, as has been seen, with the symptoms in other neighboring inflammations, that no positive differential diagnosis can be made, and such general

treatment as would be accorded to a local peritonitis would be both indicated by the symptoms and prove applicable. The relief of pain and febrile action will be indicated, and should the peritonitis become general, or the inflammation terminate in abscess, those conditions can only be guided to a favorable termination as in other similar cases.

STRICTURE OR OCCLUSION.

Accompanying other congenital defects of the generative organs, as a congenitally occluded vagina, infantile uterus, &c., &c., we may find a congenitally closed or narrowed condition of one or both tubes. The cicatricial action of ulceration is not believed often to result in occlusion, but a localized peritonitis affecting the fimbriated extremity may produce an infolding of each of the *fimbriæ*, and complete occlusion result. The adhesive effects of inflammation may produce other closures of the tube, so that the natural secretion of the tube, becoming imprisoned, the result may be dropsy of the tube or *hydrosalpinx*.

Treatment. For the relief of the closure we are, even if it be discovered, entirely without remedy. The proper treatment of the resulting dropsical condition will be considered under the head of hydrosalpinx, or dropsy of the Fallopian tube.

DILATION OF THE TUBES.

Dilation of the Fallopian tubes is accompanied by the symptoms of an ordinary uterine catarrh or chronic endometritis, of which it is but the outgrowth.

It will be evidenced, should any attempt at injection of the uterine cavity be attempted, by the passage of the injection through into the peritoneal cavity. Physically its effects are unimportant, the accompanying chronic endometritis being productive of the principal discomfort experi-

enced, relief from which will probably be followed by improvement so far as the condition of the tube is concerned.

DISPLACEMENTS OF THE TUBES.

Displacements of the tubes are nearly always the result of some other condition, such as tumors, ovarian or other pelvic growths which by their presence crowd the tubes from their proper position, or the adhesive effects of peri-uterine inflammations.

The tubes may accompany their respective ovaries in crural herniæ of the ovary. The entire significance of these displacements lies in their possible effect upon conception and the resulting sterility.

HEMORRHAGE OF THE TUBES.

Effusions of blood in the mucous membrane of the Fallopian tubes, occurring during the progress of inflammation or during menstruation, are usually absorbed. The passage of blood clots into the peritoneal cavity may excite dangerous peritonitis, or they may become encysted and in ordinary cases harmless; or the result may be, should the quantity of blood effused be quite large, the formation of a peri-uterine or pelvic hematocele.

CARCINOMA, TUBERCULOSIS AND FIBROID TUMORS.

No definitive symptoms are presented by these disorders, or by *abscess* affecting the tubes, by which they may be especially located. They are of rare occurrence, and are beyond the reach of special treatment. The general treatment for all these tubal difficulties must consist in rest, and the avoidance of all causes of local excitement, the special treatment being such as is indicated by the symptoms as they arise.

HYDROSALPINX—DROPSY OF THE FALLOPIAN TUBES.

Occasionally the Fallopian tubes become the seat of dropsical accumulation, which most frequently takes on the form of small cysts. These may be single or multiple for one or both tubes simultaneously.

While in size these cysts are usually small, ranging from the size of a hen's egg to an orange, instances are on record in which an enormous size has been attained by them, even one hundred and forty pounds of fluid being reported as evacuated from one of them; a statement to which however discredit has been attached by some authors, who consider that in the enormous distension and distortion necessarily accompanying such an extensive accumulation, the observer might have been misled as to the real origin.

The contents of these cysts, though not uniform in character, may usually be described as an albuminous serum, thin and clear or yellowish, at times discolored by the presence of blood.

Causes. Normally a small amount of secretion goes on throughout the lining membrane of the Fallopian tube, which is poured out either at the uterine or abdominal opening. By inflammatory action, or accidental torsion of the tube, the passage is rendered impervious, and the secretion thus retained distends the tube.

This inflammatory action is not necessarily confined to the tube, but the same result may be brought about through inflammation of its peritoneal investment, tending first to close its abdominal or outer extremity, after which constriction of the uterine end, occurring from the altered condition or fortuitously, completes the necessary condition. Or it may be supposed that in some cases the fimbriated extremity of the Fallopian tube being applied to the ovary at the time of ovulation remains adherent, and an excessive secretion of mucus following the tumor results, or the fim-

briated extremity may clasp upon a developing dropsical vesicle, whose migration in part or entire to the tube might thus be accomplished.

The fact that these tumors of the Fallopian tubes are almost invariably located in the outer third of the tube would give plausibility to this hypothesis.

Occasionally, and the condition is a favorable one, the uterine extremity is not so firmly closed but that it, with a somewhat periodical occurrence, allows of the escape of the contents of the cyst into the uterus and their consequent discharge *per vaginam.*

Diagnosis. The symptoms of this disease are rather negative, and resemble much those of ovarian cysts. It will not therefore appear at all surprising that a correct diagnosis is often not formed until a *post mortem* examination reveals the absolute truth; or that good diagnosticians have been misled and attributed the difficulty to some entirely foreign cause.

By combined vaginal and rectal exploration, and simultaneous abdominal palpation, the cyst or cysts may usually be made out as small floating bodies, occupying usually one side of the pelvic cavity, and presenting to the feel distinct fluctuation.

This diagnosis will of course be materially facilitated by a loose or relaxed condition of the abdominal parietes, as well as their freedom from fatty accumulations. Prof. J. Y. Simpson makes the points of diagnosis in foreign growths found in this location, that Fallopian cysts are:

1st. Free and movable.

2nd. They are usually of elongated form.

3rd. They present a wavy outline, being more or less deeply indented at points.

Sterility is a usual result, even where the disease affects only one side, from the probably catarrhal affection of the opposite side.

Prognosis. As the cysts do not usually open into the abdominal cavity but into the uterus, the hazard to life is small. Not infrequently, after the tumor has acquired a considerable size, its contents are evacuated through the Fallopian tube into the uterus. Instances of the kind have repeatedly occurred where the enlargement was such as to necessitate tapping, for which preparations were being made when the spontaneous discharge took place.

Treatment. No kind of medical treatment will probably be of any avail. Where the cyst tends to enlarge, and symptoms of increasing discomfort are present, paracentesis offers a means not only of relief but cure also, since singularly these Fallopian cysts do not usually refill after evacuation.

The aspirator needle or an exploring needle should be passed by way of the vagina at its nearest point into the most depending portion of the cyst, and the contents be thus evacuated. The operation is neither difficult or very painful; some inflammation may however supervene which must be treated upon general principles.

CHAPTER XX.

STERILITY.

Where a woman lives in a state of cohabitation with a man yet remains childless, her condition is said to be one of sterility or barrenness.

From the earliest history of man this condition has attracted great, and deservingly great attention. The entailment of vast monied estates, even the ruling family of a monarchy or kingdom often depends upon the fecundity or sterility of one woman, not to mention minor and more inconsiderable interests, which however by their multitude become a matter of enormous concern, all tending to make the subject one of the greatest solicitude and interest.

The historical student is familiar with the instance of Napoleon, who finding himself childless, and so seeing that inevitably the dominion of France must pass from his family, took steps to avert that disaster by separation from a wife he undoubtedly loved, to form another alliance that should promise to be more fruitful, and the medical student is interested in observing that while Napoleon with his first wife was childless, both with other mates were fertile.

The scriptural account of Sarah, who after the age of ninety years gave birth to Isaac, and of Rachel, who long sterile, became fertile, are but illustrations of the interest attached to this subject, an interest exhibited by all history sacred and profane, by Jew, Christian and Pagan alike, to avert that "reproach" of woman, sterility.

The subject can not be understandingly considered without a glance at the natural process of fecundation. The male semen containing an innumerable number of cells with

vibratile appendages, called *spermatozoa*, floating freely in a slightly alkaline mucus, is deposited in the vagina or against the *os uteri externum*.

These spermatozoa passing up through the cervical canal, enter the uterine cavity, and probably passing out through the Fallopian tubes appear at the ovary. Here it is usually believed the union with a matured ovum results in *impregnation*, whence the impregnated ovum passing through the Fallopian tube, reaches the uterine cavity, to some part of which becoming attached, *conception* is said to have taken place.

That impregnation does sometimes take place at or near the ovary, is rendered extremely probable by the numerous cases of extra-uterine pregnancy which have from time to time occurred; that it may take place there is by analogy demonstrated by the experiments which have been tried with the inferior animals, in which the spermatozoids have been found shortly after copulation, freely moving about the ovaries.

It will be seen therefore that for pregnancy to occur it is necessary that:

1st. There must be spermatozoa.

2nd. Ovules.

3rd. A sufficiently free opening throughout the genital canal to allow of the meeting of the spermatozoid and ovule.

These necessary conditions being present there are still subsidiary conditions of equal importance:

1st. Both spermatozoa and ovules must possess reasonable vitality.

2nd. The secretions of the parts must be bland and innocuous.

3rd. The uterine cavity must be in a sufficiently healthy or normal condition to afford the impregnated ovum a congenial resting place.

Having these facts well in mind, it will readily be seen

therefore, that the absence of vagina, uterus or ovaries will be irremediable causes of sterility.

Mechanical causes. The closure of the vagina by an obturator hymen, or by cicatricial indurations;

The closure of the cervical canal by obdurate flexions;

The impermeability of the Fallopian tubes by reason of displacement, dropsical accumulations or congenital deformity;

That condition denominated *vaginismus;* and a congenitally long and conical cervix uteri, are among the causes which may be denominated *mechanical.*

Chronic endo-metritis, producing a profusion of tenacious, often ichorous discharge, either washes away the spermatozoa or destroys their vitality; while the changed condition of the mucous membrane lining the uterus, in this affection and in membranous dysmenorrhea, renders that organ no fit place for the reception and nourishment of the impregnated ovum.

Menorrhagia and *metrorrhagia* may also carry away the impregnated ovum before its fixation can be accomplished.

It also appears that a certain amount of natural secretion favors the migration of the seminal bodies, and hence a decidedly *abnormal dryness of the parts* may cause sterility. Thus a case is mentioned by Hewitt as occurring under the observation of Dubois, in which a sterile woman became pregnant by the use of warm water injections immediately after copulation.

Syphilitic taint upon the part of husband or wife, by impairing the vitality of either semen or ovules, may result in infecundity.

As *menstruation* is simply an incidental action, it follows that it is not a necessary condition to fecundity, as numerous instances have shown.

Since *ovulation* is only healthfully performed, with rea-

sonable general bodily health, an anæmic condition, resulting in the non-production of healthy ova, may be a cause of sterility.

Sexual frigidity, or the lack of pleasurable excitement during sexual connection, is but a slight if at all a cause of infecundity, women often being met who notwithstanding complete apathy to sexual embraces, nevertheless become the mothers of large families.

It remains to mention the generally understood fact, that conception is most likely to follow a copulation which closely succeeds menstruation; also that too frequent sexual intercourse and masturbation upon the part of either husband or wife, are possible causes of sterility.

The manner in which the various circumstances mentioned tend to produce sterility, is too obvious to require further elucidation.

Prognosis. Evidently the prognosis depends upon the cause, and no intelligent opinion can be given without a previous careful investigation and consideration of the case. The previous history of the parties must so far as possible be learned, and often by forming a diagnosis by exclusion, we may arrive at the true cause.

But we shall not do the subject justice, if failing to readily find trouble upon the part of the woman, we neglect to critically investigate the condition of the man. While with reasonably developed organs of generation, sterility upon the part of males is a rare exception, nevertheless previous sexual excesses, masturbation, or syphilis, may if not impairing the power to maintain an erection of the penis, result in a failure to produce spermatozoa; hence microscopic aid may necessarily be invoked to settle this point.

Where the deficiency pertains to the woman, it can probably by judicious treatment in a majority of cases be remedied.

Treatment. Remove the cause. If the cause should be

a conical or elongated cervix uteri, the amputation of the redundant portion, or slitting it as for the cure of dysmenorrhea occurring from a similar cause, will probably produce the desired effect.

Where *flexion* is the cause, treat that difficulty. The treatment recommended under that head should be instituted, not neglecting if the flexion should prove irreducible to secure the patency of the cervical canal by incision.

A partial closure of the vagina by a *rigid hymen*, *vaginismus*, and such narrowing as to preclude the entrance of the male organ, are not absolute barriers to impregnation, which has been repeatedly observed to take place under circumstances rendering intro-mission impossible; but being possible causes, and at the least largely conducive to sterility, these conditions if found should be appropriately remedied in the manner elsewhere mentioned.

The treatment of *endo-metritis* with its attendant discharge, has been elsewhere considered, and should be followed if it appear that this is the cause of the sterility. And so with all the various conditions mentioned as contributory to the condition under consideration.

After all we may however meet with cases not specifically referable perhaps to any one condition mentioned; cases in which there is a lack of sexual vigor on the part of the woman, and which will be appropriately and successfully treated by a somewhat prolonged use of the various uterine tonics, among which as worthy of trial may be mentioned the syr. of mitchella comp., alternated with *cimicifuga*, *senecio gracilis*, *helonias*, *aletris*, etc., etc., in the usual doses, singly or combined.

The good to be derived from a somewhat generous and stimulating diet in such cases, should be invoked and the patient made mentally, physically and morally as happy as possible. The various deranged and diseased conditions

of the Fallopian tubes, as displacement, inflammation, stricture, dilation, dropsical and cystic disease, are beyond the reach of our art, and if at all recovered from, it must be through the natural tendency which Nature manifests under favorable circumstances to institute normal and healthy for pathological conditions.

CHAPTER XXI.

PELVIC CELLULITIS.

The loose cellular tissue existing between the folds of the broad ligaments, and surrounding to a great extent the entire uterus, being most markedly absent at the fundus and the median line of its anterior and posterior surfaces; existing also between the peritoneal folds forming the recto- and vesico-uterine ligaments and to a great extent surrounding the rectum, vagina and urethra, and forming a connecting link between all the pelvic viscera, becomes quite frequently the seat of inflammation.

It is found both in the puerperal and non-puerperal states, and is perhaps frequently in mild cases not recognized, the inflammation terminating favorably in a few days under judicious treatment directed at the symptoms. Indeed the mere ability to furnish a name for the disease amounts to nothing; but a recognition of the pathological condition by suggesting correct treatment, may furnish a greater percentage of recoveries, or at least more rapid and desirable terminations.

Perhaps nearly three-fourths of the cases originate from

parturition or abortion, the result being accelerated by any lingering uterine or ovarian inflammations. Those patients who have apparently recovered from chronic metritis or endo-metritis, who have at all events sufficiently recovered so that pregnancy may take place, are especially liable after their parturition to become the subjects of this disease.

Excessive and violent contractions, and consequently rapid labors, together with some difficult and rapid labors, may be succeeded by pelvic cellulitis. Early rising after confinement, or protracted or severe exertions during the parturient month favor its development.

In the non-puerperal state, excessive venery, the use of improperly fitting or constructed pessaries, blows or other external violence are among the exciting causes.

In its course the disease is liable to be complicated with inflammations of the uterus, ovaries, Fallopian tubes and the peritoneum, all of which difficulties serve to render an absolute diagnosis in such cases a matter of some difficulty.

The principal point of inflammation is subject to variation, being sometimes entirely confined to one side, at others but partially so, its most common seat being, according to Fordyce Barker, "at that point of the cervix uteri posteriorly and laterally where the vagina is attached."

Symptoms. Pain and soreness, usually in one or the other iliac region, followed by a more or less marked chill, frequently so slight as to escape notice. With fever, the increasing pain extends at times upwards to the ribs, at times crossing to the opposite side. The bowels usually tend to constipation, the urine is scant, high colored, and may be voided with difficulty and perhaps burning pain.

At first no particular difference is observable in the fulness of the two sides, but gradually a marked prominence distinguishes the affected side. Vaginal examination discloses a hot, tender vagina, the pelvis feeling as though it were filled or packed.

Upon the affected side the vagina is puffy and much thickened, which condition is the more manifest as the finger approaches the uterus. A marked lateral version of the uterus to the opposite side is observable, and while the exploring finger presses with some firmness the upper portion of the vagina on the affected side, external palpation will often develop fluctuation, or at least the presence of a sensitive and tender induration.

The uterus is fixed and immovable, the cervix swollen.

Prognosis. The prognosis as to ultimate recovery is usually favorable, but it should be remembered that a lingering illness may be anticipated.

Terminations. The termination, like that of other inflammations, may be by resolution or suppuration, the former event being considered most common.

Suppuration may discharge through the abdominal walls, into the vagina, bladder, bowels, most commonly the rectum, into the uterus; or, following down the connective tissue, may appear at the perineum. Several *sacculi* of pus may form and discharge by as many different sinuses, or a single abscess may comprise the whole.

From the inaccessibility and consequent difficulty of making topical applications, the sacculi may continue to generate and throw off pus for weeks or even months after first opening. The general duration from the commencement of the disease to the discharge of pus may be stated at from ten days to three weeks, at which the usual unequivocal constitutional signs of the formation of pus may be expected to be present, as an accelerated pulse, irregular chills, occasional clammy perspirations and impaired appetite.

Frequently the diagnosis of abscess being made, so many days pass without material change that the friends may be disposed to doubt the correctness of the physician's

opinion, and may suggest perhaps rheumatism, neuralgia, &c., &c. I am however aware of nothing that may produce the train of symptoms described, or a sufficient approximation thereto, to warrant a mistake in diagnosis.

In a case which was recently under my care, the patient four weeks after delivery, and while about the house, for two successive afternoons had a light chill, with pain in the right inguinal region, the pain subsiding entirely in three or four hours. Being called the second afternoon, and finding no perceptible tenderness upon pressure, I committed the error of supposing the case to be one of periodic neuralgia or "masked ague," a conclusion to which I felt myself the more justified in arriving, as malarious influences surrounded the patient, and the accession of chill and pain had occurred with great regularity at 2 p. m. of each day.

Accordingly *quinia* was prescribed, and the disappointment was forced upon me of seeing upon the third day a more severe chill, greater pain and marked tenderness, with slight but perceptible fulness in the region affected.

Vaginal examination disclosed the phenomena already spoken of; vagina tender, swollen, especially upon the right side; distinct left lateral version of the uterus, while abdominal palpation and vaginal exploration combined, disclosed a hardened sensitive mass, lying to the right of and above the cervix uteri. Of course a revision of the diagnosis became necessary and the adoption of treatment accordingly.

Treatment. Some discrepancy seems to exist among authors as to at least some points in the treatment, but it may be accepted as a fixed fact, whatever else may be done, that perfect quiet and rest in the recumbent posture should be enjoined.

In my own experience nothing has seemed to give the relief from urgent symptoms, that has been afforded by a

blister two or three inches square applied directly over the seat of greatest pain. I would follow this by some suitable dressing for twenty-four to forty-eight hours, until new skin had formed, when a fomentation of hops, stramonium leaves, or a poultice of flaxseed will be found a useful application.

A marked subsidence in the pain and feverishness follows the application of the blister, and after three or four days it may be again applied should the increase of pain seem to demand it. A large blister should not be applied lest it prove prostrating, and especially lest it may produce strangury.

Internally the sedative effect of veratrum or aconite, combined with an opiate or some narcotic for the relief of pain will be appropriate treatment.

The bowels, it has been recommended, should be restrained and kept inactive, but I cannot conceive upon what principle. The beneficial effects of a daily injection of unirritating nature have been so marked that I could not neglect that means of treatment, while the opposite extreme of frequent cathartics should undoubtedly be avoided.

The diet should consist of soups and meat teas, thus furnishing ample nourishment without materially loading the bowels with refuse. The tonic effects of quinine, iron, and the stimulation of alcohol and water baths, and whatever good nursing can be devised to support the patient and maintain as nearly as possible a normal condition of all the functions of the body, are so clearly indicated as to scarcely need mention here.

A point however well worthy of consideration is the matter of surgical interference to evacuate the pus. Possibly there are few parts of the body where a reckless use of the knife might be followed by more deplorable results, and as a rule perhaps operations with bistoury or trocar are as often failures, or worse than failures, as they are beneficial.

Besides, Nature usually attends to and in a safe way does provide for the escape of the pus.

These considerations should lead to a guarded and discriminating use of these means. If the patient seem prostrated and sinking under an excessive suppuration, and the processes of Nature seem too slow; if the abscess have declared its preference decidedly for the location of a vent, the chances for a successful operation are at their best.

The aspirator or a medium-sized trocar and canula will in many instances be the best instruments to use, yet as no decided criterion can be given, the operator must choose from the case before him. Most frequently the avenue of escape sought by the pus will be through the abdominal walls or into the vagina, exceptionally as has been stated passing into the uterus, bladder or rectum.

If the abdominal walls are to be pierced, an adhesion of the peritoneum should be insured if possible by the external application of a small compound tar plaster, or the application of caustic potash or nitric acid. The localized inflammation thus produced will do much to secure the desired adhesion.

The convalescence should be carefully watched for fear that too early exposures may induce a relapse. Should the discharge from the cavity or cavities last for a long time, beyond three or four weeks, thus tending to become chronic, if accessible they should be injected with the chloride or bromide of zinc, one to three grains to the ounce of water, or the sulphate of zinc, the sesqui-carbonate or permanganate of potassa may be used in solutions of reasonable strength.

CHAPTER XXII.

PERI-UTERINE HEMATOCELE.

The collection of a varying quantity of blood within the pelvic cavity, has received a variety of names besides that here adopted, as "pelvic hematocele," "pelvic thrombus," "pelvic hematoma," "bloody tumor of the pelvis," "retro-uterine hematocele," alluding to its most common location, behind the uterus, and some others. It consists in an effusion of blood from various causes and sources, which collects in the pelvis, whose organs are thereby more or less completely surrounded according as the amount of blood may be great or small. And while it is here spoken of and to some extent treated as though it were a *disease*, it should from the first be understood that it belongs to the same category as "dysmenorrhea," "hemoptysis" and some other terms which, while but *symptoms*, have a *quasi* standing in our nomenclature of diseases.

We are without evidence to show that a knowledge of this condition was in existence until a quite recent date in medical history. No longer ago than 1831, Récamier made an incision into the roof of the vagina as he supposed, for the relief of a peritoneal abscess, and obtained a discharge of disorganized blood, and a similar experience befel J. Y. Simpson, who in consideration of the disorganized blood clots and the grumous discharge which followed his incision, was inclined to believe that he was dealing with "an aberrant form of pelvic cellulitis." Since that time however, and notably within the past thirty years, the subject has been carefully investigated, and medical literature enriched

by contributions by very many eminent authorities, but most notably by members of the French medical profession.

Position. The position occupied by the collection of blood varies with its origin, and is divided into two general classes, viz:

1st. Intra-peritoneal.
2nd. Extra-peritoneal.

Intra-peritoneal variety. The position occupied by the tumor in this form is within the peritoneum of the pelvis, surrounding the pelvic organs. From whatever source blood might reach the peritoneal cavity, even though it should be from the liver, pancreas or spleen, it would naturally gravitate to the pelvis and there constitute an *intra-peritoneal hematocele.* It will therefore be seen, that so far as its effects upon the patient and the symptoms produced are to be considered, that everything depends upon the amount as well as source of the hemorrhage. Should the blood be rapidly poured out, the peritoneal cavity would become distended and death to the patient might at once occur, not only from the loss of so large a quantity of blood, but also from the shock to the system, produced by the presence of the blood in the peritoneal cavity.

If however the blood be slowly effused, descending to the lowest part of the cavity, and pressing in upon Douglas' space, it will coagulate; after which the clot thus formed becomes limited in position, either by its own wall or the products of inflammatory processes developed by its presence, and the blood tumor becomes "*encysted.*"

Extra-peritoneal variety. In the extra-peritoneal form, the collection of blood occurs in the cellular tissue of the pelvis, and beneath or without the peritoneal cavity. From the analogy of its formation and position to that of "thrombus," as occurring in the labia, some authors have preferred to style this also a thrombus.

The origin of the hemorrhage in this form of hematocele is the cellular tissue surrounding the pelvic organs; hence it will be evident that its size and location will be entirely dependent upon the exact point from which the hemorrhage originates. If occurring high up in the broad ligaments, the tumor will tend to rise high in the pelvis, and if low down, either anteriorly or posteriorly to the uterus, that organ will be displaced to the side opposite to the origin of the hematocele, by which it will be more or less completely enveloped, as in a matrix or mould.

From a consideration of the circumstances under which it occurs, it will be evident that the intra-peritoneal form may rise in or about the pelvis, to an extent only limited by the amount of hemorrhage constituting it; so too may the extra-peritoneal form displacing the peritoneum upward rise high in the pelvis, or it may extend downwards, so as partially to block the vagina, appearing to even reach the vulva by separation of the cellular tissue surrounding the vagina, and especially lying between that organ and the rectum.

The contents of either form when evacuated, will be found to consist of a dark tarry mass of more or less disorganized blood, presenting probably some partially broken down clots; some pus cells if the tumor have remained long enough for their formation to be accomplished, also crystals of hematin, etc., etc.

Pathology. From what has been said, it will be seen that hematocele is not a disease, but simply a symptom or condition depending for its existence upon pathological conditions which are usually so difficult to determine during life as to make their true character at best merely a matter of conjecture. So while it is simple enough to say that *hematocele* consists in a collection of blood within the pelvis, or to even divide the conditions under which such tumors exist into the two general forms of *intra-peritoneal* and

extra-peritoneal, we can go no farther pathologically, except it be to speculate upon the reasons for such accumulation or to state some of the causes which have been revealed to us by *post mortem* investigations.

Intra-peritoneal hematocele may be caused:

1st. By a rupture of some of the blood vessels in the uterine or ovarian plexus.

2nd. By rupture of the ovary.

3rd. By rupture of the pregnant uterus.

4th. By hemorrhage from the Graafian vesicle.

5th. By the rupture of the cyst of an extra-uterine pregnancy.

6th. By a reflux of menstrual blood from the uterus through the Fallopian tubes.

7th. By the rupture of varicose veins in the broad ligament.

8th. By the rupture of blood vessels of the peritoneum or of any organ therewith connected.

Under the heading of menstruation, allusion was made to the fact that during the menstrual period the vascular system of the reproductive organs became congested and turgid by the influx of blood. It has been shown by Dr. Savage that the veins of the pelvic and perineal venous systems are unprovided with valves, yet they freely intercommunicate with each other.

The result of this arrangement would be that at a period, as the menstrual, when they were to an unusual extent engorged with blood, any cause, as jumping, running, heavy lifting, severe exercise and the like, by increasing the pressure upon those veins, might determine their rupture. And while it is probable that the rupture of blood vessels immediately connected with the uterine plexus of blood vessels would lead to an extra-peritoneal hemorrhage, it does not inevitably follow; but if the rupture

occur to some of the vessels connected with the ovarian venous system the resulting tumor can hardly fail to be intra-peritoneal.

Although it is probable that from this source arise the greater number of cases of hematocele, as the subjects usually ultimately recover, it is impossible to demonstrate such a conclusion in the only possible way—by a *post mortem* investigation.

On page 292 reference is made to what has been termed an *apoplexy of the ovary*, and it is only necessary that the quantity of blood effused into the stroma of that organ should be considerable enough, to cause its rupture and the escape of blood into the peritoneal cavity, constituting an intra-peritoneal hematocele.

Rupture of the pregnant uterus can hardly fail to result in the effusion of blood within the peritoneal cavity. Seldom indeed would a rupture of this organ escape recognition, and in this case at least we should have a pretty definite knowledge of the source of the hemorrhage.

Hemorrhage from the Graafian vesicle is a quite probable source of blood for the formation of an intra-pelvic hematocele. What the usual amount of hemorrhage may be which attends the rupture of a mature Graafian vesicle, is purely a matter of conjecture, as also the manner of its disposition. Some authors have even been disposed to attribute a quite considerable portion of the blood produced in an ordinary menstruation to this source, alleging that the exact apposition of the peritoneal end of the Fallopian tube secured its transmission to the uterus.

For my own part I can see not the least reason for constructing such a complicated hypothesis. No vital act in the economy is conducted by chance, and it certainly will not answer to expose woman at each menstrual epoch to the dangers of hematocele, shielded only by the *chance coaptation* of the fimbriated extremity of the Fallopian tube

to the exact spot from which is emerging a Graafian vesicle. We must then either endow that extremity with a sentient or almost reasoning faculty, enabling it to apply itself to the right place at the right time; or provide some physical reason, which would be best, most philosophical and most in analogy with other vital processes; or conclude, which seems to me most probable, that the normal amount of blood lost at this point is small.

This view is, to my mind, made all the more probable by the fact that in cases of occlusion of the Fallopian tubes, from dropsical accumulations or other results of inflammatory action, or where by reason of displacements their course has been rendered so tortuous as to seemingly, at least, interfere with the passage of menstrual blood, we do not nevertheless find any increased predisposition to hematocele, which would indeed seem inevitable were these tubes the normal conductors of any considerable amount of the menstrual effusion.

But conceding that this matter of opinion is thus decided, it does not at all prevent an unusual or abnormal effusion occurring to serve as a cause for hematocele.

Extra-uterine pregnancies usually terminate sooner or later in the rupture of their containing cyst, and the effusion of blood into the pelvic cavity and the formation of a hematocele would be one, but probably not the least in severity, of the conditions with which we should be called upon to contend.

During *menstruation*, should any obstruction occur or pre-exist to the escape of the menstrual fluid, it may gain exit from the uterine cavity through the Fallopian tubes, and thus give rise to intra-peritoneal hematocele. In these cases more danger is to be anticipated from recently acquired obstructions, as recent flexions, atresia of the vagina, &c., than from similar difficulties occurring congenitally.

Varicose veins in the broad ligaments, although likely in their rupture to give rise to extra-peritoneal hemorrhage, may also produce the intra-peritoneal form. Their rupture will be determined under the same circumstances and by the same causes as that of the veins of the uterine and ovarian plexuses.

And finally, from whatever cause occurring, the rupture of blood vessels of the peritoneum, or any of its contained viscera, may result in an intra-peritoneal hemorrhage.

Extra-peritoneal hematocele may be caused :

1st. By rupture of hemorrhoidal veins.

2nd. By rupture of veins of the uterine plexus.

3rd. By rupture of varicose veins of the broad ligament.

The rupture of hemorrhoidal veins has been observed to lead to an extensive infiltration of the cellular tissue lying between the rectum and vagina, in which location was thus formed a "thrombus" extending upwards behind the uterus.

The rupture of veins connected with the *uterine plexus*, may more likely find vent beneath or without the peritoneum into the cellular tissue surrounding the uterus, the position and size of the tumor thus formed being governed by the location and extent of the rupture.

The rupture of varicose veins of the broad ligament may result in an infiltration of the cellular tissue lying between its folds or surrounding the uterus, constituting thus an extra-peritoneal hemorrhage.

Constitutional causes. Operating alone or in connection with the causes already enumerated, a variety of constitutional causes may favor the production of a peri-uterine hematocele. Among these causes may be enumerated :

1st. Prostrating and debilitating fevers.

2nd. Anæmia.

3rd. Chlorosis.

4th. Purpura.

5th. The cachectic condition produced by small-pox, measles, diphtheria, etc.

Predisposing conditions. Under this head may be considered:

1st. The age of menstrual activity.

2nd. The presence of menstruation.

3rd. The presence of chronic disease of the uterus or ovaries.

Terminations. Peri-uterine hematocele terminates:

1st. In death from shock and loss of blood.

2nd. In absorption.

3rd. In induration.

4th. In suppuration and abscess.

5th. In rupture into the bowel, vagina or peritoneum.

Termination *in death* while an uncommon is not an improbable or unknown occurrence. In such cases the fatal result may follow in half an hour, and in all probability before any medical attendant has even formed a correct diagnosis of the case, and in fact a true diagnosis may never be made. The extreme prostration and collapse, unless accompanied by pains sufficiently marked in their location to direct the mind of the practitioner to the difficulty under consideration, might be attributed to other causes, and ultimately nothing but a *post mortem* examination would perhaps reveal the truth.

As illustrating the symptoms which may in such a case be present, with the ultimate result, I quote from Thomas, a portion of the report of a case reported by Dr. E. Pearl in the *Lancet* for October, 1870. * * * "On September 6th, she was in her usual health, and between 2 and 3 P. M., she went up-stairs to dress, carrying her baby in one arm and a jug of water in the other hand. Whilst brushing her hair, she became suddenly faint, and 'felt a pain all over her.'

"I saw her for the first time about 5 P. M. She was in a

state of collapse; sensible; countenance pallid; eyes sunken; pulse at the wrist scarcely perceptible. She had vomited two or three times, simply half digested food. She complained of great pain at the pit of the stomach and between the shoulders, with a feeling of suffocation. She said she thought she had a miscarriage. A vaginal examination showed there was no uterine discharge whatever. The vagina was cool; its upper walls somewhat tender to the touch, soft and bulging. Brandy, opium, and ether were administered freely, but she gradually sank, and died at 12:30 A. M. on September 7th, about nine hours and a half after the commencement of the attack."

A *post mortem* examination disclosed the peritoneal cavity containing a large quantity of fluid blood, and some dark clots in the pelvis.

In a case which came subsequently under my observation, the attending physician diagnosed the case, "congestion of the bowels," although at the time I examined the patient under an anæsthetic some months after, I could not doubt that she had an absorbing hematocele, whose origin dated from the attack of supposed "congestion of the bowels." It is a matter of much doubt if a case of this nature will ordinarily be properly diagnosed, and I have here alluded to the subject by reference to the two preceding cases, exhibiting in the one case the symptoms and some of the difficulties attendant upon diagnosis; in the other, the conclusions reached by the medical attendant, in order to place the reader more especially upon guard in forming a diagnosis in cases presenting symptoms of a character likely to be confounded with the condition under consideration.

In this connection it should be remembered that, while in some cases the attack may be sudden and supervening upon some unusual exertion, or occurring from unknown causes, and be of so severe and desperate a character as to

in a few hours terminate in death, that in other cases the hemorrhage is more gradual, and that the pelvic accumulation may from time to time receive slight accessions, as for instance during successive menstrual periods. The latter result will be more likely to ensue in case of some partial obstruction to the escape of menstrual blood, or in the presence of some of the constitutional causes heretofore mentioned constituting a *hemorrhagic diathesis.*

Diagnosis. The points which are of assistance in the formation of our diagnosis, will depend considerably upon the stage at which our examination is conducted. Thus if the case be a recent one, or more especially if we should be called during the progress of the hemorrhage, the *history of the case* is of comparatively minor importance; but if we be called upon one or two months later, the past history and the mode of the attack become all-important matters for consideration.

The attack may be preceded by a sensation of fulness, or throbbing in the pelvis, or in the region of one or both ovaries, or upon the other hand, its onset may be sudden and without premonition. Pain in the pelvis, while often present, is not necessarily a symptom; the prostration and general symptoms of hemorrhage are unavoidably present where the hemorrhage is at all considerable; a feeble, rapid pulse; coldness of the extremities, with nausea and vomiting; febrile action with development of peritonitis, accompanied by the usual symptoms of peritoneal inflammation; vesical, uterine and rectal tenesmus, especially if occurring at or near a menstrual period, are indications pointing so strongly towards hematocele, that it would certainly be the duty of the medical attendant to investigate such a case thoroughly.

In all suspected cases a vaginal examination should be made. This will disclose a fulness or puffiness, usually more marked posteriorly, and presenting perhaps slight

fluctuation. A distended bladder from retention of urine should be remembered as a possible cause of confusion.

If, however, the examination should be made some days after the attack, the symptoms present will probably vary from those already described. Prostration and weakness, mechanical constipation of the bowels, a constant feeling as though some substance were in the vagina demanding efforts for its expulsion, difficult micturition, &c., are some of the symptoms which may now be present.

Vaginal examination now discloses a more or less irregularly shaped tumor, which may seem to clasp the uterus like a mould, while it displaces it towards the opposite side of the pelvis. Abdominal palpation may disclose the tumor reaching as high as the umbilicus, or it may descend between the vagina and rectum to the floor of the pelvis. At first the tumor may be somewhat doughy and compressible, but later it appears perfectly hard, and with the uterus it may give the same feeling of hardness and fixation as is present in *carcinoma.*

Rectal examination simply discloses the obstruction to the bowel, if the hematocele be retro-uterine, as is most usually the case.

In all cases the sudden appearance of the pelvic tumor serves, with the history of the attack, to differentiate it from other pelvic growths, as *ovarian tumor*, *carcinoma* and the like.

A *retro-flexed uterus* might perhaps, in its physical appearance, much resemble a retro-uterine hematocele, but the history of the case will assist a diagnosis rendered certain by means of the uterine sound, which may be used in cases wherein the presence of pregnancy has been excluded.

The *differential diagnosis* between the intra- and extra-peritoneal forms of this affection, will be assisted by a consideration of the structures affected. From this it will

appear that the intra-peritoneal form will be likely to rise higher in the abdomen; that owing to its freedom so to do, pressure upon the bladder or rectum may not be present; and the constitutional and general disturbance will be great. In the extra-peritoneal variety the general reverse of these propositions is probably true; the tumor lies low in the pelvis, encroaches upon the bladder, vagina and rectum, but does not cause so great a degree of constitutional disturbance.

Prognosis. Usually and in general terms favorable, though largely depending upon the severity of the attack, the amount of hemorrhage, the constitutional trouble manifested, and to some extent the *cause;* for should its cause be a hemorrhagic diathesis, the prognosis will be more unfavorable.

Treatment. The indications, if called during the progress of the hemorrhage, will be to arrest it, and support the patient. To facilitate the formation of a clot and decrease the amount of hemorrhage, perfect rest and quiet must be secured. The extremities should be ligated as in puerperal hemorrhages, so as to retain in their venous systems as large a quantity of blood as possible.

Warm applications to the feet, legs and arms will be grateful to the patient, and attract blood in that direction, while cold applications, as bags or bladders of ice to the abdomen and region of the pelvis, are indicated.

Internally veratrum to moderate the frequency and force of the circulation, and if well borne by the patient, opium for the relief of the pain and its incidentally sedative effect. Stimulants according to the circumstances, always bearing in mind the tendency which very considerable amounts of alcohol in the system have to prevent the coagulation of blood, and hence its inapplicability in large quantities. Even after the subsidence of the acute symp-

toms, the patient should not be allowed to rise from the bed for any purpose; the bladder should be regularly emptied with a catheter, and the bowels when occasion requires may be moved by an enema.

After the abatement of the acute symptoms, Thomas recommends the application of a blister to the abdomen, unless contra-indicated, and remarks that, "although apparently harsh practice, it prevents much suffering, while it causes but little."

The general treatment should be such as indicated by the circumstances. It will doubtless include such tonics as cinchona and iron, and possibly alteratives to accelerate the absorption of the effused blood.

Surgical interference. The treatment by surgical interference has had its advocates and its opponents. Its claimed benefits were that by an early evacuation of the sac:

1st. The tension upon the structures adjacent as well as its cyst wall was relieved, and consequently pain and suffering were abridged.

2nd. A mass which would possibly disintegrate and go through the various stages of suppuration was removed, and the patient thus relieved from the dangers of putrefactive absorption.

Upon the other hand, the experience of those who have treated many cases shows that:

1st. The dangers of putrefactive absorption have not been lessened but rather increased by the operation.

2nd. That if left to themselves these blood tumors are usually spontaneously absorbed.

The large preponderance of medical opinion at the present day seems therefore to limit operative interference to:

1st. Cases in which with pain and inflammatory symp-

toms the tumor is increasing in size, and thus threatening to form a connection with the peritoneal cavity.

2nd. Cases in which liquefaction of the tumor with probable suppuration has commenced.

3rd. Tumors especially which can be clearly demonstrated to be extra-peritoneal in location.

The operation. If the contents of the tumor are liquid, and consist of broken-down blood clots or pus or both, their evacuation may be accomplished by the use of a trocar and canula, or an aspirator. For the puncture, the most depending and fluctuating point should be selected.

Should clots however be present, the parts may be exposed with a Sims speculum, and an incision made into the tumor with a bistoury or tenotome, which incision should be enlarged as occasion may require to secure the removal of the clots. In either event the cavity may be gently washed out with water containing a little sulphite of soda, salicylic acid, chloride or bromide of zinc (grs. x to xv to water Oj), or a very diluted solution of carbolic acid.

In the final management of all cases, care must be taken to avoid any probable predisposing causes to second attacks, to which there is probably a liability. Only limited physical exertions should be made during the menstrual week, and coition should be prohibited for several months. Even very slight exertion, if too early attempted, may lead to a relapse.

CHAPTER XXIII.

HYSTERIA.

Nosology. The name *hysteria*, from a Greek word, signifying the womb, indicates a shrewd guess or belief upon the part of early nosologists and pathologists, that the disease was connected with or caused by some derangement of that organ.

Modern writers have in some instances indorsed the belief, but at the present time it is believed, that while derangements of the womb may in some cases cause the condition denominated *hysteria*, that other causes are also operative.

Definition. Hysteria is the name applied to a condition which manifests itself in a multitude of nervous symptoms. It is not like the diseases heretofore treated of in this volume, entirely limited to females, but may at rare intervals be observed in male subjects. The comparative rarity however of such cases, and the large preponderence of instances in which it appears in females, seem to make it a fit subject for consideration in this place.

In the definition of hysteria, Dr. Reynold's says: "The essential character is an exaggeration of involuntary motility, and a diminution of the power of the will; the emotional, sensational and reflex movements are in excess, while the voluntary are defective, * * * reflex movements which in health are under some control, are not only exaggerated in their individual intensity as a part of the hysteric state, but, from the weakness of volition, are allowed to run such riot that they pass beyond all bounds of healthy influences."

Sydenham in speaking of hysteria says: It "is not more

remarkable for its frequency, than for the numerous forms under which it appears, resembling most of the distempers wherewith mankind are affected. For in whatever part of the body it be seated, it immediately produces such symptoms as are peculiar thereto; so that if the physician be not a person of judgment and penetration, he will be mistaken, and suppose such symptoms to arise from some essential disease of this or that particular part, and not from the hysteric passion."

Symptoms. From what has already preceded, it will be seen that the symptoms are liable to present a very great diversity of appearance in different patients. In the ordinary forms, the prominent characteristic is the *nervous*, or more accurately speaking, the *mental* character of the affection. Nearly every disease has been simulated, and with so great fidelity as to often perplex even experienced practitioners. It will be observed however, that in such cases the symptoms presented are the patient's *conception* of the disease, which may often present such deviations from the original, as to betray the true character of the difficulty to the acute diagnostician.

Thus if epilepsy with its attendant convulsions be simulated, the attack will lack reality in the violence of the convulsions, the tongue or lips will not be bitten, and though apparently consciousness may be lost, it is not in fact.

The most frequent manifestations of hysteria are accompanied with or preceded by great mental irregularities, alternate fits of sobbing or crying and immoderate laughter, for which in either case no adequate cause is apparent.

The so-called *globus hystericus*, a sensation as of a ball or hard substance rising from the region of the stomach to or near the throat, is very frequently but not necessarily present.

An interval of apparent unconsciousness may supervene,

during which the teeth will be closely set together and the eyes closed. If an attempt be made to elevate the lids, it is resisted with all the muscular power of the lid, which would not be the case were consciousness lost as in an epileptic or apoplectic condition.

The pulse is but slightly if at all affected; the respiration normal, or at times accompanied by sighing or sobbing; the pupil of the eye is not at all affected, and the eye upon being by force uncovered will usually sweep about the room to take in a view of the surroundings.

So persistently however is a condition of rigidity in some cases maintained, that although two chairs may be placed at such an interval of separation as to afford a support simply for the head in the one and the feet in the other, the patient will nevertheless maintain her position indefinitely.

Such cases are usually immediately caused by some mental shock, as of grief, joy, jealousy, etc., etc., and are promptly relieved when a more profound mental impression is produced.

In hospitals, or where many persons are the frequent observers of these attacks, they have been observed to spread by sympathetic influence, thus causing many of the bystanders to become similarly affected. An instance of the kind with its treatment, is mentioned by Dewees, in which at the Harlaem hospital, "a girl was brought into the ward in convulsions of a periodical kind; the convulsion was repeated the next day, which affected several who beheld her in the same manner, and, in a few days more, all were affected who were in the same ward, whether they were girls or boys." At length becoming alarmed, the authorities sent for the distinguished Boerhaave. "He directed that a variety of iron implements should be heated red hot in a furnace in the ward, and be in readiness at the time these convulsions were wont to make their appearance; and ordered,

that the first one that was seized with the disease, should be burnt on the arm with a heated iron to the bone. This so alarmed the subjects of this affection, that an instant stop was put to the complaint."

A more uncommon and by far more perplexing class of cases are those in which disease of some organ is simulated. An apparently diseased joint has been blistered and fomented for weeks, upon the supposition that inflammatory or rheumatic disease was being combated, when the true difficulty was merely a manifestation of hysteria. Patients have shut themselves up in dark rooms for years even, under an impression, so strong as to be to them a reality, that the least glimmer of light would be the cause of unendurable pain.

Pathology. Upon the pathology of hysteria, the most diverse and unreconcilable ideas have been advanced, and it can not be said that at the present time our knowledge has in this direction advanced beyond the domain of individual opinion. In the main it may be said, that two principal beliefs are entertained; the one that all hysterical phenomena are connected with a derangement of the reproductive organs, the other that this is not necessarily the case.

Those who deny the theory of sexual derangement, base their denial chiefly upon the fact that the advocates of that belief are unable to point out the particular sexual derangement or disorder productive of hysteria. But upon the other hand, they themselves are unable to give even as accurate an idea of what the real cause may be.

We all are aware that such a disease as *tetanus* may follow various injuries to the nervous system, but no one can go further than to refer it to some reflex action, mysterious in its manifestations; no one can tell us with such certainty why tetanus should follow some surgical operations as to

enable us to, knowing so much of its cause, prevent its occurrence in the future.

I have personally long believed that hysteria was due to some as yet specifically undiscovered derangement of the reproductive system. That there even is any *specific condition* or derangement to whose account hysteria may in all cases be charged I must be allowed to doubt, without however affecting the truth of the general proposition. That women may be the subjects of flexions, versions, inflammations of the uterus, the ovaries, the vagina, ulcerations and inversions of the uterus, and the whole category of diseases affecting the reproductive organs, and yet be free from hysterical manifestations can not be doubted. That as a usual rule the appearance of these or any of these disorders in a decided form and manner, in short any real substantial or tangible bodily affection, will be the signal for a disappearance of hysterical manifestations, I believe to be also true, and would by this simply understand that vent is thus found for the expenditure of the results of a nervous irritation which otherwise finds expression in hysteria.

The irritation of the Graafian vesicle to the ovarian nerves is imperceptible, until its cumulative effect is exhibited in menstruation; nevertheless I can not doubt its existence. So too I believe an irritation, having its center in the sexual system, may in persons of irritable nervous systems, find vent or expression in the phenomena of hysteria.

Some of the reasons for supposing this irritation to center in the reproductive organs are:

1st. The greater prevalence of hysteria during the child-bearing age or period of greatest sexual activity.

2nd. The frequency with which hysterical attacks are manifested in the newly married.

3rd. The influence which rapid child-bearing seems to frequently exert in developing hysteria.

4th. The fact that the hysterical manifestations are almost invariably increased at the menstrual period, if indeed this be not the only time at which they are manifested.

5th. The fact that has often been observed that an examination *per vaginam* may develop attacks.

6th. The fact that very many attacks of hysteria yield in from one to five minutes upon making firm pressure externally with the thumb upon the region of one ovary and the fingers upon the other.

Predisposing causes. Among the causes predisposing to hysteria, are:

1st. The female sex.
2nd. The child-bearing age.
3rd. An excitability of the nervous system.
4th. Ill health or anæmia.
5th. Luxurious and sedentary habits.
6th. Masturbation.
7th. Uterine displacements.

Exciting or immediate causes. These are chiefly of a mental or emotional character, as profound grief, joy, intense hatred, jealousy, etc., etc. In some cases depending probably upon some uterine displacement as a predisposing cause, unusual exertions prove the exciting or immediate cause of hysterical outbreaks.

Diagnosis. The diagnosis while in some cases simple and easy, is in other cases extremely difficult. In the case of simulated diseases, some discrepancy is almost sure to occur if the case be closely scrutinized, which will be sufficient to attract the attention and arouse suspicion. The increased discharge of a clear limpid urine in or during attacks of a suspected hysterical character, is of almost diagnostic importance.

The *globus hystericus* if present at any stage of the attack, and the presence of an apparent but not real unconsciousness,

with a pulse slightly if at all differing from normal or unaffected, and sobbing or sighing respiration, are points which will serve for the diagnosis of ordinary cases. In cases of a painful joint, the absence of swelling, heat and other indications of inflammation or rheumatism may serve to form a diagnosis, which after all may require time and a careful weighing of symptoms before a positive opinion can be pronounced.

Prognosis. So far as relief from the paroxysms in ordinary cases is concerned, our prognosis will be favorable. The prospect for cure of the hysterical disposition is doubtful or depends upon the discovery and removal of the cause. The removal of an excessively impressible or irritable condition of the nervous system, of itself a predisposing cause, may prove a matter of great difficulty, but the acquisition of a decided improvement in the general health, will do much to remedy the difficulty.

Treatment. The indications for treatment are two-fold :

1st. Cases of hysterical paroxysms or convulsions demand temporary relief.

2nd. So far as possible the removal of all predisposing or exciting causes is demanded.

Hysterical convulsions being induced in most cases by some violent mental emotion as an immediate or exciting cause may be most readily removed by the production of a more profound mental impression. While many other remedies may subserve an equally satisfactory purpose, the *tinct. lobeliæ et capsici comp.*, in teaspoonful doses, may be relied upon to bring rapid relief. Equal parts of the tinctures of lobelia and capsicum used in the same manner, by separating the lips and introducing a teaspoonful, will seldom if ever demand a repetition of the dose, and in more than one instance, I have known the keeping of a small bottle of one of these preparations in the house, with the certain knowledge

that it would if occasion demanded be used, to act as such a *charm*, that no hysterical manifestations ever appeared.

In promptitude and efficiency of action it will be found immensely superior to asafetida, burnt feathers, ether, camphor, aqua ammonia, or any other preparations most commonly used for this purpose.

The *second indication* will demand for its fulfilment the strictest inquiry to if possible ascertain some remediable predisposing cause. To this end, any discovered uterine or ovarian disease should be remedied. Prof. Hewitt is a firm believer in the causative influence of flexions of the uterus, and in support of his opinions cites numerous instances in which he has, by the discovery and relief of flexions of the uterus, succeeded in relieving hysteria. Should either flexion or version be discovered, it should certainly receive the treatment applicable to the relief of such a condition. It has been heretofore mentioned that pressure over the region of the ovaries frequently relieves hysterical paroxysms, thus indicating an ovarian origin.

If a soreness upon pressure, or pain, or sensation of throbbing or fulness in the region of those organs be discovered, the application of the tincture of iodine should be made for some weeks if need be, as frequently as the condition of the skin will permit.

Menstrual irregularities, if found, as they frequently will be, accompanying this condition, demand appropriate treatment for their relief. If no dyscrasia be discoverable, it will be appropriate nevertheless to administer for weeks such remedies as the *syr. mitchellæ comp.;* and the *tinct. of sumbul* in doses of ten drops three times daily, with or without the combination of tinct. of pulsatilla, will be found to exert a general calmative influence upon the nervous system.

Ferruginous and bitter tonics are in a large proportion of cases applicable, being especially demanded in the

anæmic condition found frequently present. Moral mental treatment is important, but often difficult to conduct. Added to the surroundings of such patients, which are often unfavorable, there is quite usually a disposition adverse to the mental effort necessary to make this portion of our treatment as successful as it ought to and might be.

The patient should nevertheless be persistently and firmly taught that mental effort upon her part is necessary, effort to prevent those exaggerated emotional manifestations which, when once allowed to acquire headway, soon for the time overpower reason. And in the treatment of what may be termed the *active* demonstrations of hysterical emotion, perhaps even amounting to a hysterical convulsion, the friends and attendants of the patient should be enjoined from resorting to demonstrative treatment, such as fanning, chafing the hands, the application of camphor and ammonia to the nostrils, the manifestation of excitement and alarm; all of which simply prove excitants to the hysterical excitement under which the patient labors, and tend to prolong the attack. Only such attendants should be present as are necessary to the proper care of the patient, and the room should be kept quiet and free from confusion or disorder.

NYMPHOMANIA.

Inordinate sexual desire in the female, as opposed to *satyriasis* in the male, receives the name of *nymphomania.*

Causes. The cause is probably almost exclusively cerebral, and is due to a deranged condition of the cerebellum. By some an enlarged *clitoris,* or exaggerated development of the *nymphæ,* has been supposed to possess causative influence. Ovarian and uterine irritation are also frequently present, but whether as *causes* or *effects* it is impossible in most cases to determine. Masturbation is much more probably an effect than a cause of the condition under consideration.

Prognosis Doubtful and in severe cases unfavorable.

Treatment. Our remedies may be classed as:

1st. Medicinal.
2nd. Surgical.
3rd. Hygienic.
4th. Moral.

Of *medicinal means* I am unacquainted with any more effectual remedy than the *mono-bromide of camphor*, which may be advantageously administered in pill form as follows:

℞. Camphor bromidæ, ʒ j.
Ext. conii, grs. x.
Solutionis acaciæ, q. s. ut ft. massæ.
Ft. pil., no. 15.
Sig. Take one pill two to four times daily.

A pill composed of lupulin and gelsemin may also be recommended:

℞. Lupulinæ, ʒ j.
Gelsemin, grs. ij.
Ft. massæ sec. art.
Ft. pil., no. 15.
Sig. Take a pill two to four times a day.

The administration of such remedies as the potassic bromide, conium, chloral, &c., &c., while useful, will be found usually less effectual than the remedies above suggested. Pessaries, each containing of the ext. of conium grs. x, or ext. of belladonna grs. j to ij, or morphia or opium in proper quantity, may be introduced into the vagina every night, and there allowed to dissolve.

As a suitable *mass* for the formation of such pessaries, use may be made of cacao butter or the following, recommended by Heywood Smith:

Gelatinæ, partem unam.
Glycerini, partes quatuor.

Dissolve or soften the gelatine with water for some

hours, then add the glycerine, and heat in a water bath until the mass becomes a homogeneous semi-liquid.

Surgical means. Enlargements of the *nymphæ* and *clitoris* from the exposure to the friction of the clothing are probably indirect causes, or at least tend to make the disease more obstinate. With doubtful effect it has been recommended to blister those parts; with still doubtful but better promise, their excision has been practiced. The most that can probably be said in favor of this proceeding is that, while it does not remove the original cause, it perhaps disposes of one of the exciting causes.

Hygienic measures. Under this head we must include out-door exercise, the frequent use of cool sitz baths, and the avoidance of all rich or highly seasoned food, spices, &c. Sleep should be upon a moderately hard mattress, in a cool, well-ventilated room; the amount of bed-clothing should be limited, and all luxurious habits avoided.

Moral measures. The mind should be directed into healthy channels of thought, and all prurient or sensational reading prohibited. The companionship and reading should be of a high order, and all tendency to lascivious thoughts so far as possible banished.

EPILEPSY.

Under this heading it is not, of course, proposed to consider any except such cases as appear due solely to causes peculiar to women.

The immediate pathological condition of epilepsy is a subject also more peculiarly fitted for consideration in other places. The remote causes of that condition may be many, and among them are causes of an obscure character, it is true, but unquestionably related to the female sexual organs, and which are therefore properly considered here.

All are familiar with the reflex action by which de-

rangements in the uterine circulation produce nausea and vomiting, palpitation of the heart, syncope and various other phenomena. It matters little whether the congestion to uterine tissue be caused by the growth of an impregnated ovum or that of some tumor. Hewitt is a firm advocate of the presence of some form of *flexion* as the exciting cause in all such cases, even the vomiting of pregnancy.

Another form in which nervous disorders, due to derangements in the circulation of the female reproductive system, may be manifested is that of *epilepsy*. Most frequently this manifestation is connected or accompanied with *amenorrhea*, and occasionally with *spammenorrhea* or scanty menstruation. The form of *amenorrhea* which is most frequently accompanied by epileptiform symptoms is that of *emansio mensium*, or that form in which, in young women of proper menstrual age, the flow has never appeared. It is impossible to say why amenorrhea should be a symptom of that uterine disease productive of this epileptiform condition, and usually difficult or impossible to say whether the irritation is one of the uterine or ovarian nerves.

Symptoms. A young woman, in age from twelve to seventeen or eighteen, previously exempt, becomes liable to epileptic attacks. The attacks may be few or many, light or severe, but they usually manifest an exacerbation in their symptoms at periods resembling those of the *catamenia*. Pelvic pains are commonly but not necessarily observed, and menstruation is absent or scanty. Some degree of general ill health is often observed, but in this respect the *malaise* may be so trifling that but for the convulsive attacks it would pass unnoticed.

Prognosis. Usually favorable. Should the attacks however continue for years unchecked, the result will be a gradual impairment of the mental faculties, as is usual in other forms of epilepsy.

Treatment. Any standard treatment for epileptics can in this case at best but prove palliative. The diseased condition of the generative organs will, if relieved, prove curative as to the epilepsy as well.

The nightly introduction of pessaries, medicated with belladonna, conium or opium, will assist in relieving the irritation and congestion. Internally the following prescription has very often proved of service:

℞. Ammon. muriat., ʒ iss.
Ext. belladonnæ fl.,
Tinct. aconiti rad., aa ʒ j.
Aq. camphor., ad ℥ viij.
M. Sig. Dose a teaspoonful three times a day.

After two or three weeks its place may be supplied for an equal time by the tinct. of pulsatilla, in five-drop doses three or four times a day. If anæmic, or if the mucous membranes have a bluish or leaden hue, some form of iron, especially in combination with valerian and quinia, should be administered.

As exerting a special stimulating influence upon the reproductive organs, and an empirically salutary influence upon the epileptic attacks, an acetous tincture of *ruta graveolens* (rutæ grav. ℥ viij, acid. acetic., aq. destil., aa ℥ viij) in half-dram doses three times daily is beneficial.

Such palliative remedies for the epileptic paroxysms as are deemed advisable may be administered, and throughout the whole treatment the highest and best general state of health is to be fostered by proper diet, exercise and general hygienic surroundings.

CHAPTER XXIV.

DYSPAREUNIA.

Definition. Not infrequently cases are met in which there is not only complete apathy to sexual embraces, but the act of coition causes pain. To this condition has been attached the name of *dyspareunia.* The amount of pain may vary from simple discomfort to such distress as amounts to a virtual prohibition to all attempts at copulation.

Causes. Various diseased conditions of the sexual organs may contribute to produce this condition, which it will be perceived is in truth not a disease, but a *symptom.* Among the principal causes may be enumerated:

1st. Vaginismus.
2nd. Hyperæsthesia of the vulva.
3rd. Urethral caruncle.
4th. Imperfect rupture of the hymen.
5th. Constriction or atresia of the vagina.
6th. Chronic metritis or "irritable uterus."
7th. Disparity in the size of the organs of the sexes.
8th. Carcinoma or ulcerations of the vagina; also vaginitis, acute, chronic or specific.
9th. An irritable condition of the ovaries.

Diagnosis. Vaginismus would be detected by the spasmodic closure of the *ostium vaginæ* upon attempted digital examination. This method of examination will also serve to disclose the nature of the difficulty in most other cases. *Inspection* will be necessary to verify a previously suspected *urethral caruncle.* In all cases, the principal and possible

causes being borne in mind, it will not usually be a difficult matter to determine the true cause.

Prognosis. This will depend entirely upon the *cause*, and will be favorable in the proportion that the cause is remediable. Most cases are capable of being successfully treated.

Treatment. The indication is obvious; remove the cause. The treatment of vaginismus, hyperæsthesia of the vulva and urethral caruncle has already been considered under their respective heads.

An imperfect rupture of the hymen or a rigidity of that structure may require that it be dissected away with forceps and scissors, following which dilation, as in vaginismus or constriction or atresia of the vagina, may be serviceable. Disparity in the size of the copulative organs will probably prove an irremediable obstacle; the process of dilation of the vagina, as laid down in the treatment for vaginismus and atresia of the vagina, would promise something when the inequality is not too great. *Carcinoma* of the vagina is irremediable. The various forms of vaginitis may be cured, as also ulcerations of that organ usually. In patients of a strumous diathesis, a hyperæsthetic condition of that organ is occasionally to be met with, which, although presenting no visible or tangible indications of disease, will be found in treatment very intractable. In such cases the best results are promised in the use of a prolonged local narcotic treatment, with internal alterative and tonic remedies.

CHAPTER XXV.

METRIC WEIGHTS AND MEASURES.

As the system of metric weights and measures has been adopted by the United States Marine Service, and is being adopted by many physicians in writing their prescriptions, I have thought it best to here present some comparisons between this system and that in common use. That the metric system will ultimately become the universal plan of measurement adopted is probable and to be hoped.

The greater simplicity of the system most strongly commends it to use, and its immediate adoption is only prevented by the fact that the ideal "grain," "dram," "ounce," &c., have so long been impressed upon the mind that it is difficult to *think* in other units.

I can not too strongly urge all, especially young practitioners, to familiarize themselves with the metric system, and as an aid propose here to offer a few suggestions.

We can all easily think in *yards*. If now for yard we substitute in our thoughts *metre* (39.370432 inches), we shall be *thinking* closer than most of us can *guess*. The error will be about one in twelve; *i. e.*, twelve metres equal thirteen yards and less than four inches. So it will be seen that for purposes of *thought* it is quite accurate. The centimetre is the one hundredth part of the metre. If for every inch we *think* two and a half centimetres, our error will be very small.

The *gramme* is the unit of weight, and represents the weight of a cubic centimetre of water at its greatest density. Its exact weight is 15.43234874 grs., less than fifteen and a half grains, and for purposes of thought sufficiently near

fifteen grains or the fourth part of a dram. A little daily practice will thus learn us to think in *grammes.*

In liquid measures we can ordinarily make the cubic centimetre our unit, considering it equal to fifteen minims or the fourth part of a fluid dram, and for all ordinary purposes of prescription these approximations of thought are sufficiently accurate. This then would be how our ideal table would stand:

1 yard	=	1	metre	(nearly).
1 inch	=	2½	centimetres	"
15 grains	=	1	gramme	"
¼ dram	=	1	gramme	"
15 minims	=	1	cubic centimetre.	
1 fl. dram	=	4	cubic centimetres.	
1 fl. ounce	=	32	cubic centimetres.	

With this table well in mind, we can comprehend and if necessary write our prescriptions in accordance with the metric system. To fix and simplify the reduction in mind, the following rules have been devised, and published by Surgeon General John M. Woodworth, of the United States Marine Service, for the information of medical officers in that service:

"1. *To express quantities by weight of the apothecaries' system in metric terms, or to write medical prescriptions in metric weights.*

"*Rule A. Reduce each quantity to grains; then divide the number by* 10 (or move the decimal point one place to the left), *and from the quotient subtract one-third.* The remainder is in each case the number of grammes representing (nearly) the same quantity. Or,

"*Rule B. Reduce each quantity to drams, and multiply the number by* 4. The product is in each case the number of grammes representing (nearly) the same quantity. Or,

"*Rule C. Reduce each quantity to ounces, and multiply*

the number by 32. The product is in each case the number of grammes representing (nearly) the same quantity.

"2. *To express quantities by measure of the apothecaries' system in metric terms, or to write medical prescriptions in metric cubic measures.*

"*Rule D. Reduce each quantity to minims; then divide the number by* 10 (or move the decimal point one place to the left), *and from the quotient subtract one-third.* The remainder is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

"*Rule E. Reduce each quantity to fluid drams, and multiply the number by* 4. The product is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

"*Rule F. Reduce each quantity to fluid ounces, and multiply the number by* 32. The product is in each case the number of cubic centimetres (nearly) representing the same quantity."

Concerning the abbreviations to be used, and the manner of writing prescriptions, I quote from the same authority still further:

"The terms 'gramme' and 'cubic centimetre' might be abbreviated 'Gm.' and 'C. C.' To preclude the possibility, (in *careless* writing), however, of mistaking the sign 'Gm.' (gramme) for the sign 'gr.' (grain), the number should invariably precede the sign, using the common Arabic numerals. Thus while 'ten grains' is always written 'grs. x' (Roman numerals being used), 'ten grammes' would be written '10 Gm.' When the term 'centigramme' is used, it should be spelled out in full. 'Ten centigrammes' might, however, more conveniently be written '.10 Gm. than 10 centigrammes.' In writing, the above abbreviated metric denominations should always be underscored, but the preceding number should not."

I subjoin two illustrations showing the manner in which by these rules prescriptions will compare:

℞. Ext. viburni prun. fl., ℥ iij.
Ext. conii fl., ℥ j.
Syr. simp., ℥ iv.
M. Sig. Dose a teaspoonful three times a day.

Written according to the metric system, the prescription would stand:

℞. Ext. viburni prun. fl., 96 C. C. (Rule E.)
Ext. conii fl., 32 C. C.
Syr. simp., 128 C. C.
M. Sig. Dose a teaspoonful three times a day.

Or, again:

℞. Zinci bromidi, grs. xxv.
Morph. sulph., grs. v.
Aq. dest., ℥ vj.
M.

Written metrically in accordance with the foregoing rules, this prescription will stand:

℞. Zinci bromidi, 1.67 Gm. (Rule A.)
Morph. sulph., 0.34 Gm.
Aq. dest., 192 C. C.
M.

In cases where, as above, the hundredths of a gramme fall between decimal terminations, it will usually be advisable, as it is sufficiently accurate, to carry the hundredths figure up or down so that it may terminate in "5" or "0." In this way the foregoing numbers would stand, for the zinc bromide, "1.65 Gm.;" for the morph. sulph., "0.35 Gm."

The grain troy or apothecaries' weight is equal to 0.065 grammes. By considering the grain in prescription writing

equal to 0.06 grammes, the error will amount to the deficiency of a grain in between thirteen and fourteen grains; *i. e.*, if we wish to write grs. xiij metrically, and in the calculation consider the grain as only 0.06 grammes, our result will be nearly but not quite one grain too small.

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